HELSINKI COMMISSION
Baltic Marine Environment
Protection Commission

Report on shipping accidents in the Baltic Sea area during 2011

Photo by Carlos Minguell/OCEANA

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1 Introduction

Annual reports on shipping accidents in the Baltic Sea area have been compiled by HELCOM since 2000. According to the agreed procedure all accidents are reported irrespectively if there was pollution or not. This includes accidents which involved tankers over 150 gross tonnage and/or other ships over 400 GT, both in territorial seas or EEZ of the HECOM Contracting Party. Accident types cover i.a. groundings, collision with other vessel or contact with fixed structures (offshore installations, wrecks, etc.) disabled vessels (e.g. machinery and/or structure failure), fire and explosions.

The reader should be aware that in 2004 a new reporting format was developed and used for the reporting of accidents starting in 2004. For that reason the data for 2000-2003 and the subsequent years (2004-) are not fully comparable. The changed reporting is interpreted as a reason for the increased number of accidents in 2004 and subsequent years.

All Contracting States have provided national reports on shipping accidents in 2011. In 2011 no accidents occurred in German waters with tankers over 150 GT or other vessels over 400 GT.

2 Ship traffic in the Baltic

To get a full picture of the shipping safety in the Baltic, basic information on the intensity of shipping is of importance. IMO regulations require Automatic Identification System (AIS) transponders to be fitted aboard all ships of 300 GT and upwards engaged on international voyages, cargo ships of 500 GT and upwards not engaged on international voyages, as well as all passenger ships irrespective of size. The AIS enables the identification of the name, position, course, speed, draught and cargo of ships and displays all available data over a common background map.

In the Baltic Sea area movements of ships are gathered in the regional HELCOM AIS database. According to the HELCOM AIS, there are about 2,000 ships in the Baltic marine area at any given moment, and each month around 3,500–5,000 ships ply the waters of the Baltic. The intensity of traffic can also be illustrated by the number of ships crossing the pre-defined HELCOM AIS lines as presented in ***Figures 1*** and ***2*** (ships according to the type of vessels and their draught, respectively). A snapshot illustrating the spatial distribution of shipping activities in the whole Baltic at a specific moment can be seen in ***Figure 3***. ***Figure 4*** shows the average traffic on the Baltic Sea based on AIS signals during one year. The numeric data behind maps in Figures 1 and 2 are presented in ***Tables 1 and 2***.

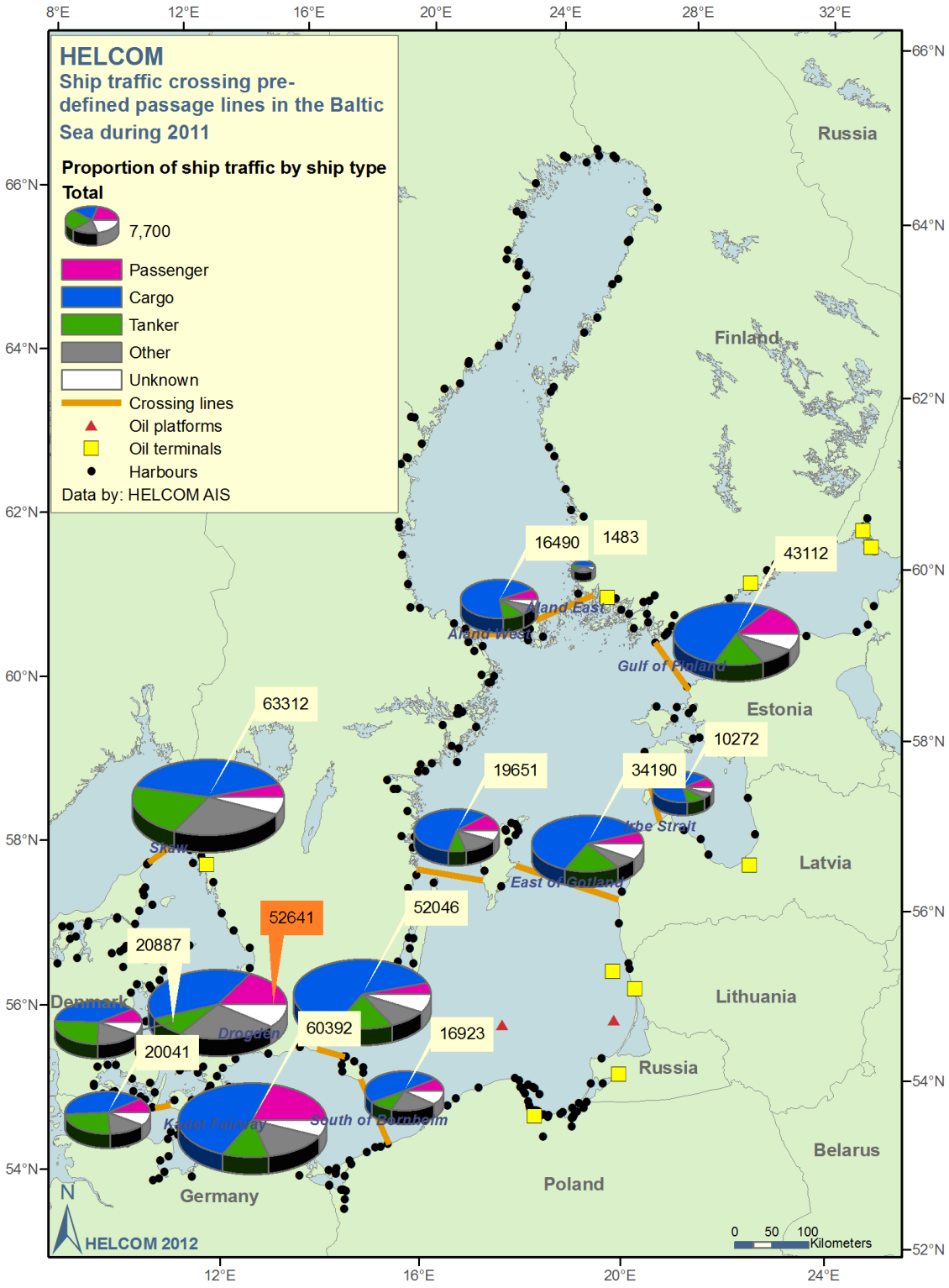


Figure 1. *Number of ships crossing AIS fixed lines in the Baltic Sea in 2011 according to the type of the vessels. The figure for Drogden (red box) is approximately 30% higher than the number of ships verified by the Danish maritime authority (DMA) through i.a. visual methods. The discrepancy between the HELCOM AIS statistics and the manual statistics in the Drogden area is being investigated.*

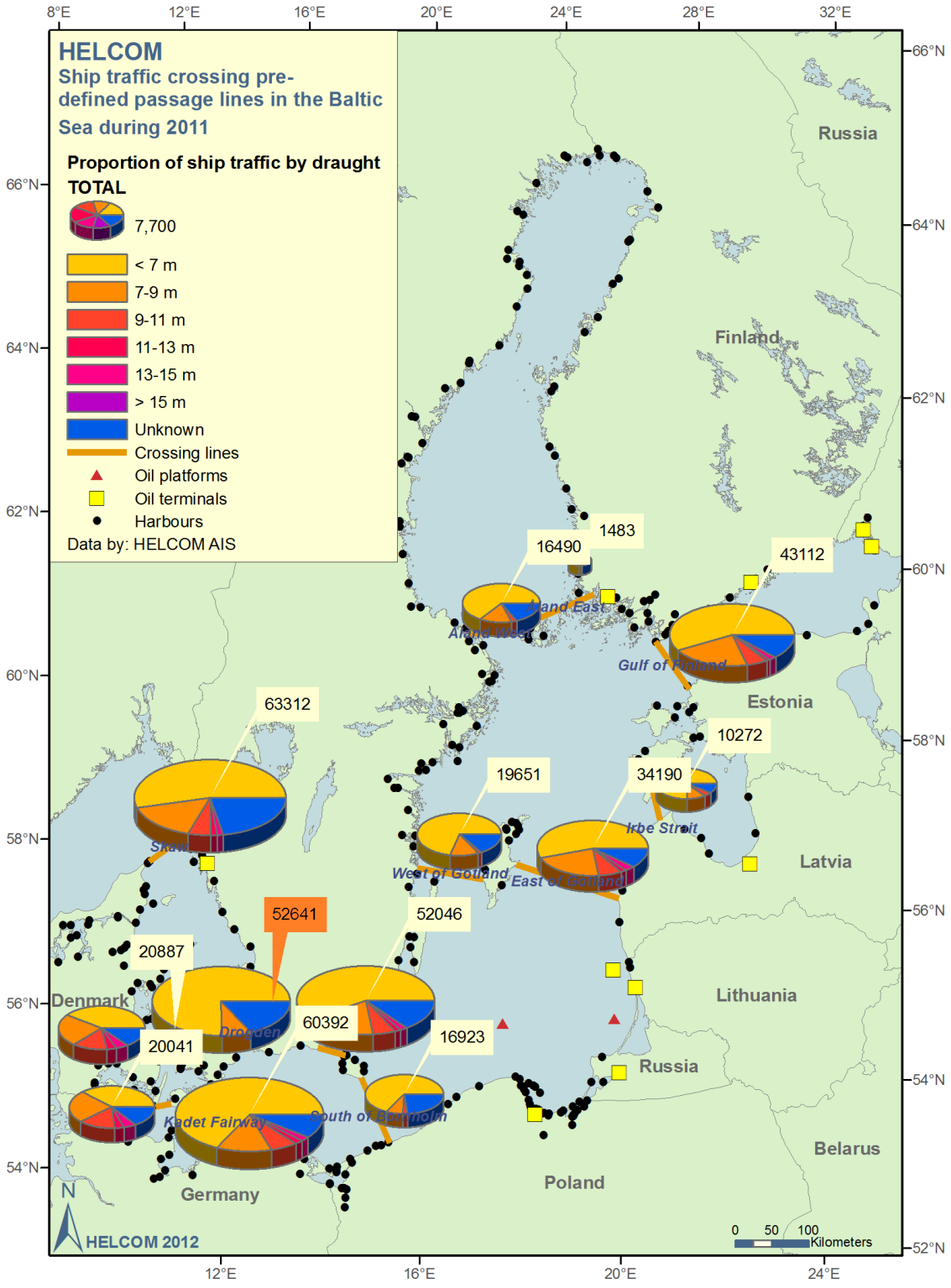


Figure 2. *Number of ships crossing AIS fixed lines in the Baltic Sea in 2011 according to the draught. The figure for Drogden (red box) is approximately 30% higher than the number of ships verified by the Danish maritime authority (DMA) through i.a. visual methods. The discrepancy between the HELCOM AIS statistics and the manual statistics in the Drogden area is being investigated.*

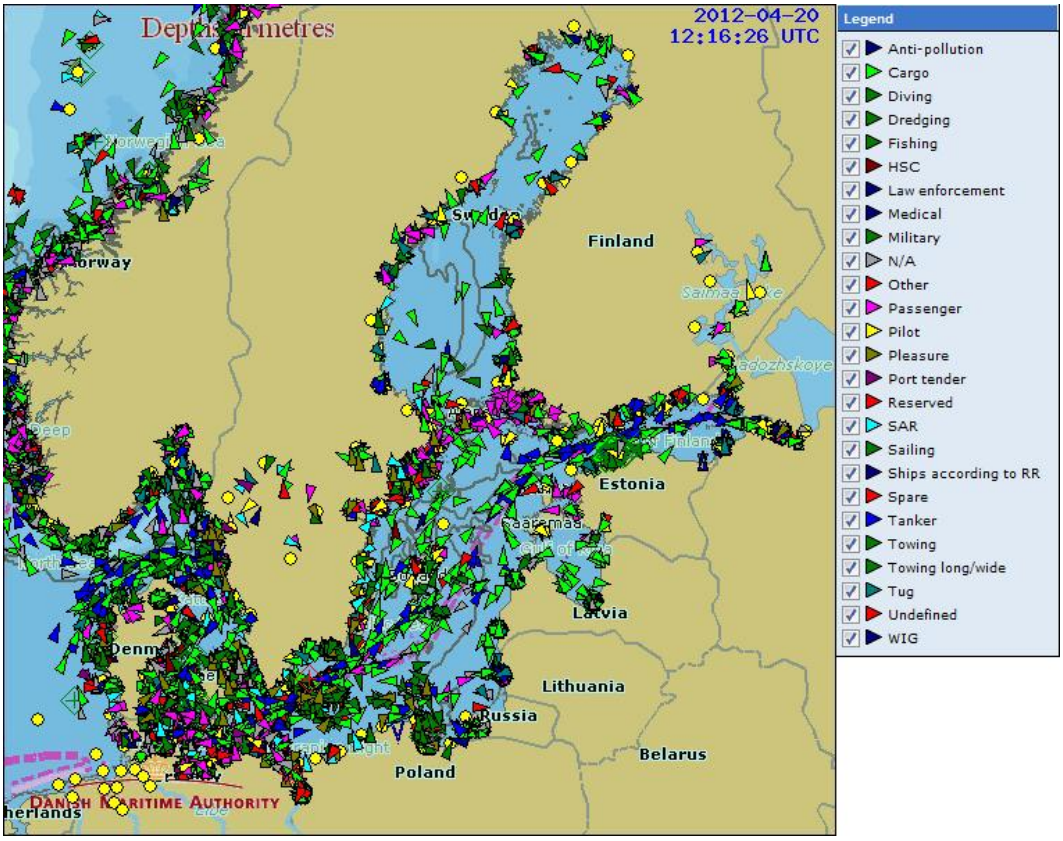


Figure 3. *Snapshot of ship traffic in the Baltic Sea on 20 April 2012. Note: the yellow dots illustrate AIS stations and the arrowheads depict different types of ships and direction of travel.*

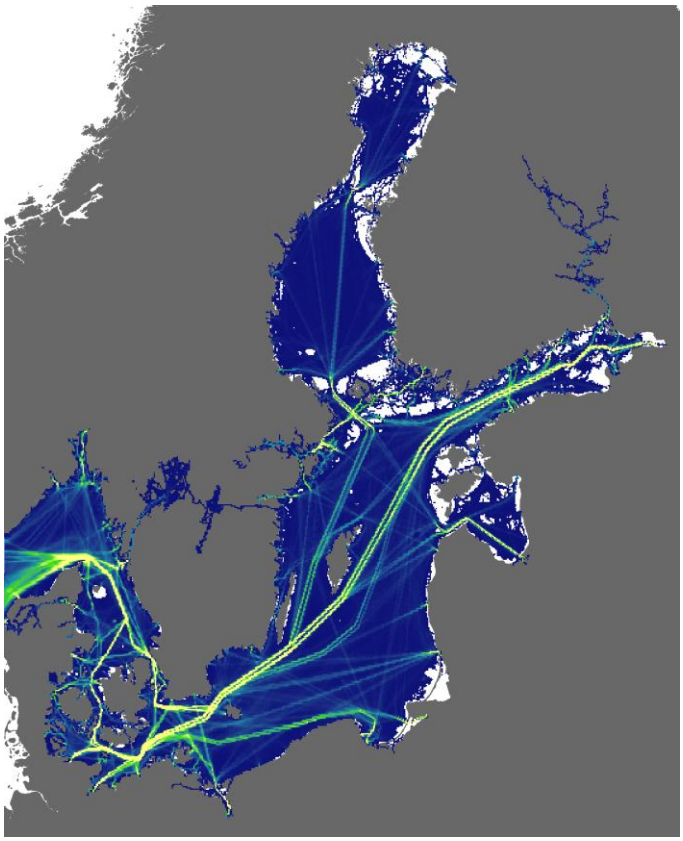


Figure 4. *The figure shows the monthly average density of shipping traffic during 2011, with the busiest routes highlighted in yellow.*

Location	Type of ship					
	Passenger	**Cargo**	**Tanker**	**Other**	**Unknown**	**Total**
Skaw	2619	27019	11589	18636	3449	63312
Great Belt East Bridge	1689	8624	5269	3911	1394	20887
Drogden*	7745	21178	4415	14864	4439	52641
Langeland East	1706	8502	5064	3243	1526	20041
Kadet Fairway	11660	28223	8346	8938	3225	60392
North of Bornholm	2047	32445	9470	4763	3321	52046
South of Bornholm	1366	8317	1805	3944	1491	16923
West of Gotland	1945	11945	1830	2785	1146	19651
East of Gotland	1681	20850	7158	2086	2415	34190
Åland West	1016	11744	1847	1173	710	16490
Åland East	16	692	143	507	125	1483
Gulf of Finland	5613	23338	7416	3956	2789	43112
Irbe Strait	840	7153	1253	547	479	10272
Total	**39943**	**210030**	**65605**	**69353**	**26509**	**411440**
Percentage of total	**10**	**51**	**16**	**17**	**6**	**100**

**) Please note the discrepancy between the number of ship crossings in Drogden included in the table and the verified number of crossings in Danish national data (total 30,000-35,000).*

Table 1. *Number of ships crossing AIS fixed lines in the Baltic Sea in 2011 according to the type of the vessels.*

Location	Draught							
	<7 m	**7-9 m**	**9-11 m**	**11-13 m**	**13-15 m**	**> 15**	**Unknown**	**Total**
Skaw	33497	9771	4159	1193	1191	265	13236	63312
Great Belt East Bridge	8761	3927	3461	962	1133	122	2521	20887
Drogden*	39520	4802	0	0	0	0	8319	52641
Langeland East	7940	3864	3437	961	1136	126	2577	20041
Kadet Fairway	39350	9854	4200	973	1140	105	4770	60392
North of Bornholm	29634	10576	3621	817	1084	115	6199	52046
South of Bornholm	10904	1572	434	102	20	3	3888	16923
West of Gotland	13704	2879	344	27	51	1	2645	19651
East of Gotland	18467	7912	2985	589	1033	131	3073	34190
Åland West	10310	2936	465	32	51	5	2691	16490
Åland East	1082	72	18	0	0	0	311	1483
Gulf of Finland	24140	10387	2884	437	813	138	4313	43112
Irbe Strait	7613	1294	400	90	74	0	801	10272
Total	**244922**	**69846**	**26515**	**6188**	**7726**	**1011**	**55232**	**411440**
Percentage of tot.	**59.5**	**17.0**	**6.4**	**1.5**	**1.9**	**0.2**	**13.5**	**100**

**) Please note the discrepancy between the number of ship crossings in Drogden included in the table and the verified number of crossings in Danish national data (total 30,000-35,000).*

Table 2. *Number of ships crossing AIS fixed lines in the Baltic Sea in 2011 according to the draught.*

HELCOM AIS has been in operation since July 2005, providing additional information for the analysis of each individual accident case by respective Contracting States. The findings of such investigations are discussed during meetings of HELCOM groups with a view to identify the need and possibilities for further HELCOM actions.

The HELCOM AIS historical statistics on ship traffic allow for the assessment of annual changes in traffic intensity. Since 2006, HELCOM has been following the trends in vessel traffic crossing fixed AIS lines, which are shown in ***Figure 5*** and ***Table 3***. In 2011 an increase in the overall ship traffic could be seen again after a decreasing trend in 2009-2010, now being at almost at the same level as in 2007. The decrease in AIS registered ship crossings in 2009 and 2010 for passenger, cargo and other ship types was likely due to decreased shipping activity resulting from the economic recession.

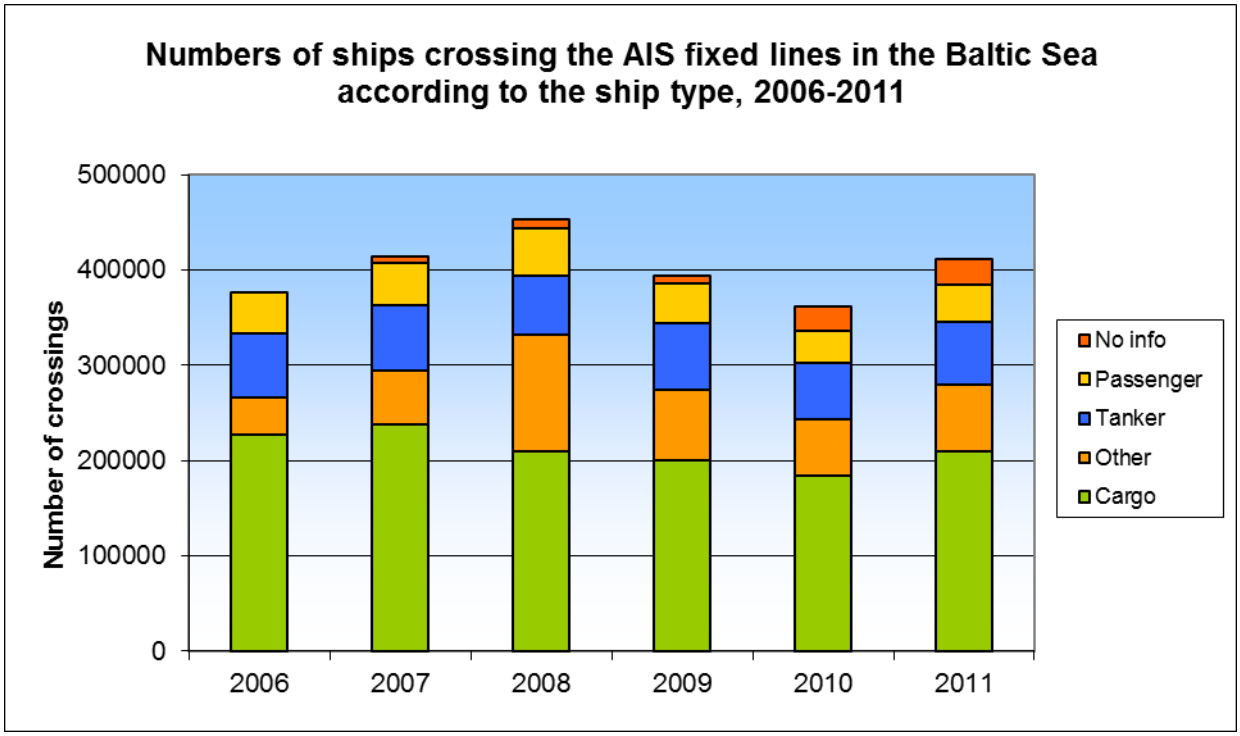


Figure 5. *Number of ships crossing fixed AIS lines in the Baltic Sea during 2006-2011, shown here by ship type.*

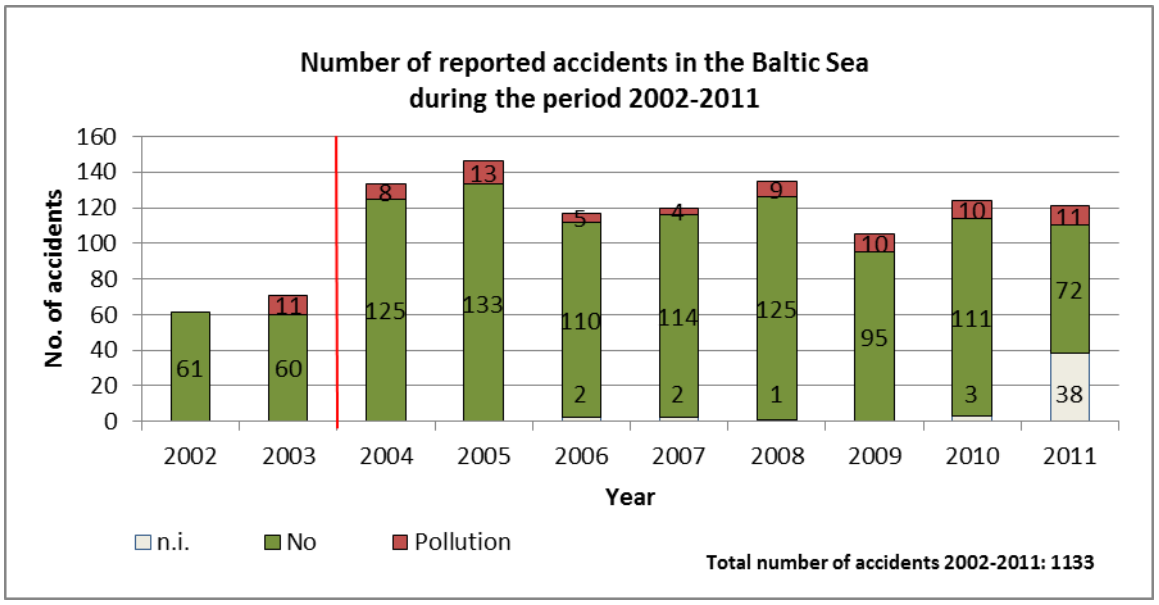
	Passenger	Cargo	Tanker	Other	No info	Total
2006	42731	226855	67458	39627	-	376671
%	11.3	60.2	17.9	10.5	0	100.0
2007	43215	237342	69335	56981	6901	413774
%	10.4	57.4	16.8	13.8	1.7	100.0
2008	49355	210021	61996	122029	10297	453698
%	10.9	46.3	13.7	26.9	2.3	100
2009	42408	200595	69021	73906	8096	394026
%	10.8	50.9	17.5	18.8	2.1	100.0
2010	32779	184166	60200	58684	26383	363293
%	9.0	50.7	16.6	16.2	7.3	100.0
2011	39943	210030	65605	69353	26509	411440
%	10	51	16	17	6	100

Table 3. *Number of ships crossing fixed AIS lines in the Baltic Sea during 2006-2011.*

For more information about maritime traffic in the Baltic Sea region, see: http://www.helcom.fi/shipping/navigation/en_GB/navigation/.

3 Overview of accidents in the Baltic Sea

According to the reports from the Contracting States there were 121 ship accidents in the HELCOM area in 2011 (***Figure 6***), which is 3 less than the year before (decrease of 2.4%) but 16 more than in 2009 (increase of 15%).



Please note that due to a new reporting format in 2004 the data for 2002-2003 is not fully comparable with the data for 2004-2011.

Figure 6

The spatial distribution of the reported accidents in 2011 is presented in ***Figure 7***. As can be noted, most accidents occurred very close to shore or in harbours.

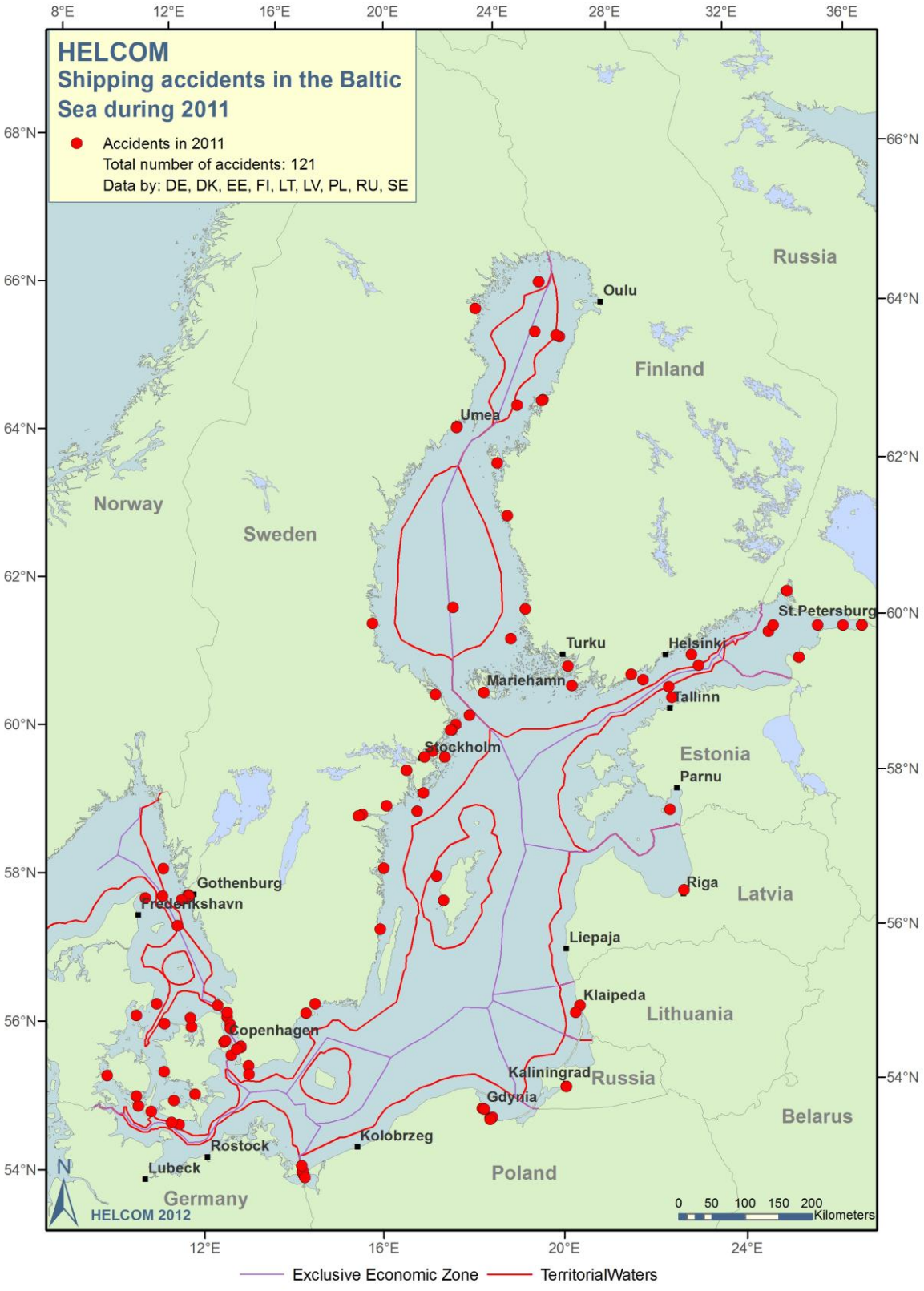

HELCOM
Shipping accidents in the Baltic Sea during 2011
Accidents in 2011
Total number of accidents: 121
Data by: DE, DK, EE, FI, LT, LV, PL, RU, SE
8°E
12°E
16°E
20°E
24°E
28°E
32°E
36°E
68°N
66°N
64°N
62°N
60°N
58°N
56°N
54°N
Russia
Finland
Norway
Sweden
Estonia
Latvia
Lithuania
Belarus
Poland
Germany
Oulu
Umea
Turku
Helsinki
St.Petersburg
Mariehamn
Tallinn
Stockholm
Parnu
Riga
Liepaja
Klaipeda
Gothenburg
Frederikshavn
Copenhagen
Kaliningrad
Gdynia
Kolobrzeg
Rostock
Lubeck
N
HELCOM 2012
0 50 100 150 200
Kilometers
Exclusive Economic Zone
TerritorialWaters

Figure 7

4 Types of accidents

The main types of shipping accidents in 2011 were collisions and groundings, accounting for 35% and 25%, respectively (***Figure 8***). Machinery damage made up 12% of the remaining shipping accidents while pollution and fires caused 8% and 7% of the accidents, respectively. Other unspecified types of accidents accounted for 13% of the reported shipping accidents.

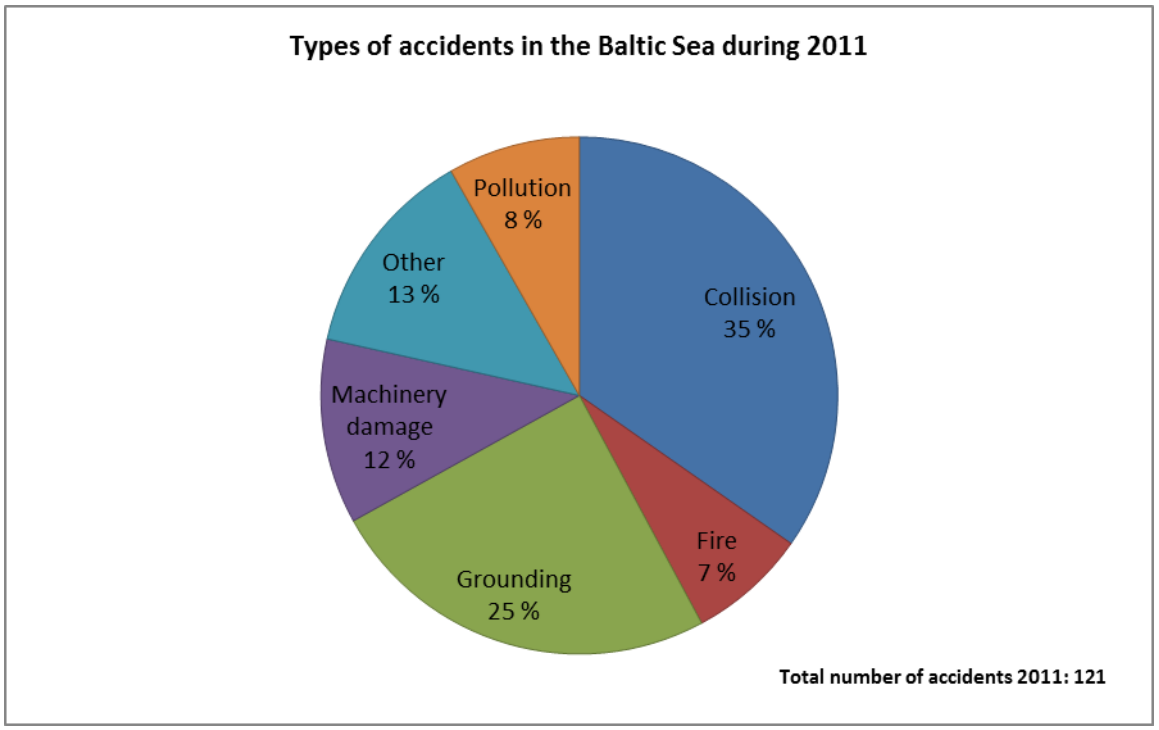


Figure 8

The share of collision accidents (35%) in 2011 (***Figure 8***) almost equals their share in the total number of accidents during 2002-2011 (34%) (***Figure 9***). The share of groundings (25%) was significantly lower in 2011 compared to their share of the past 10-year period (39%).

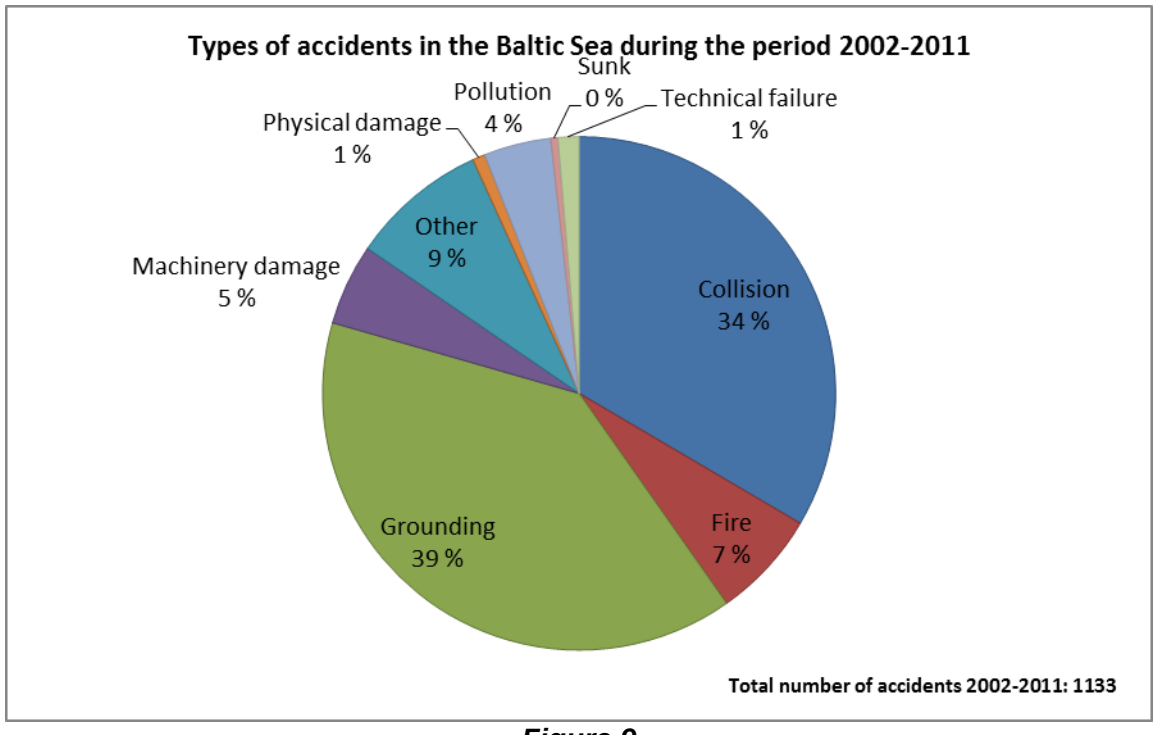


Figure 9

Spatial distribution of different types of reported accidents in the Baltic Sea in 2011 is presented in ***Figure 10.***

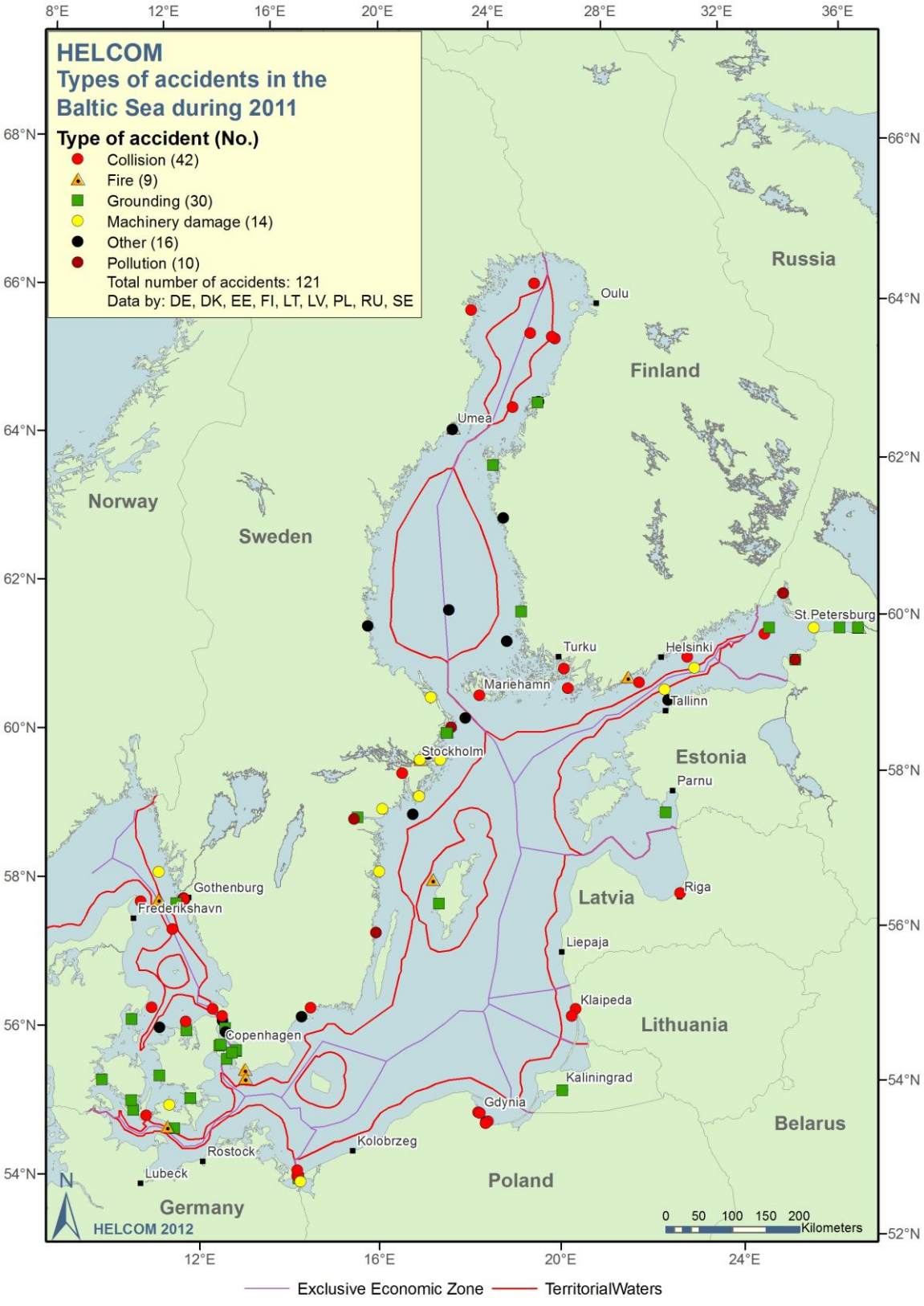
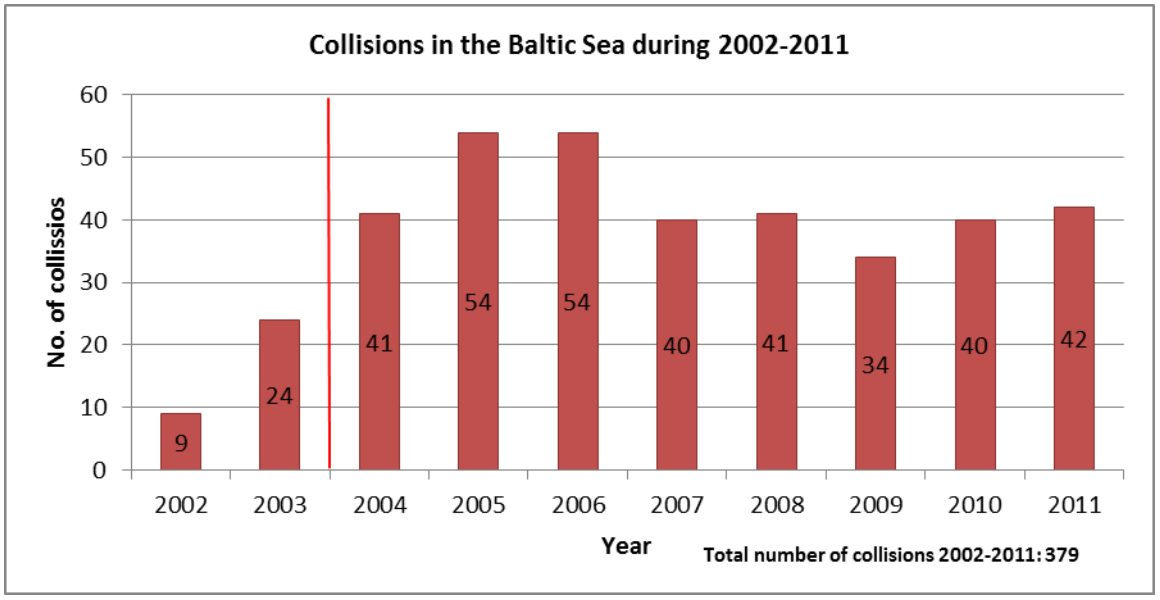


Figure 10

4.1 Collisions

Amounting to 42 cases (35%) of all accidents; collisions were the most frequent type of shipping accidents in the Baltic Sea in 2011. Collisions were also in 2010 the most common type of accidents while in 2006-2009 groundings were more common than collisions. The number of collisions has stayed almost the same since 2007 except for 2009 when the number of collisions was 34. The number of collisions increased in 2011 with 5% compared to 2010 and with 19% compared to 2009 (***Figure 11***).



Please note that due to a new reporting format in 2004 the data for 2002-2003 is not fully comparable with the data for 2004-2011.

Figure 11

Ship to ship collisions accounted for 50% of all collision cases in 2011 which is the same percentage as in 2010 and significantly higher than in the three previous years. Five cases in 2011 were collisions with vessel and with object (fixed and/or floating structures, e.g. peers, navigation signs etc.) and the rest of the cases were collisions only with object. The number of collisions with object decreased with 16% compared to 2010 and with on average over 30% compared to 2005-2009 (***Figure 12***).

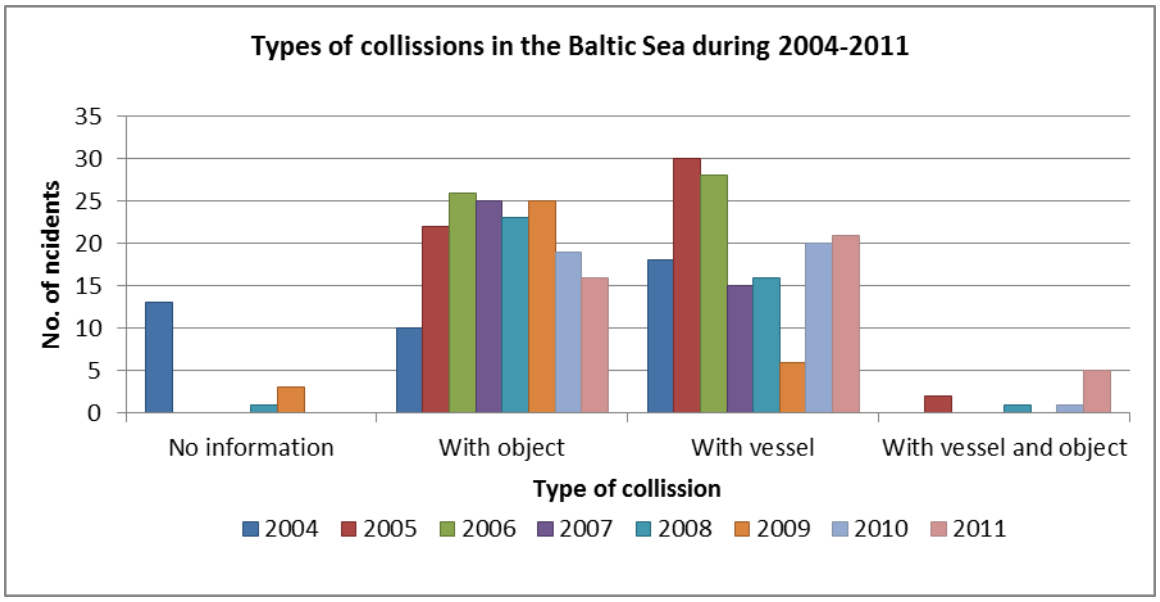


Figure 12

Spatially, collisions in 2011 occurred mostly in near shore areas (***Figure 13***). Also the map of collisions during 2002-2011 (***Figure 14***) points toward approaches to ports and the Danish straits as the most risky areas for ships to collide.

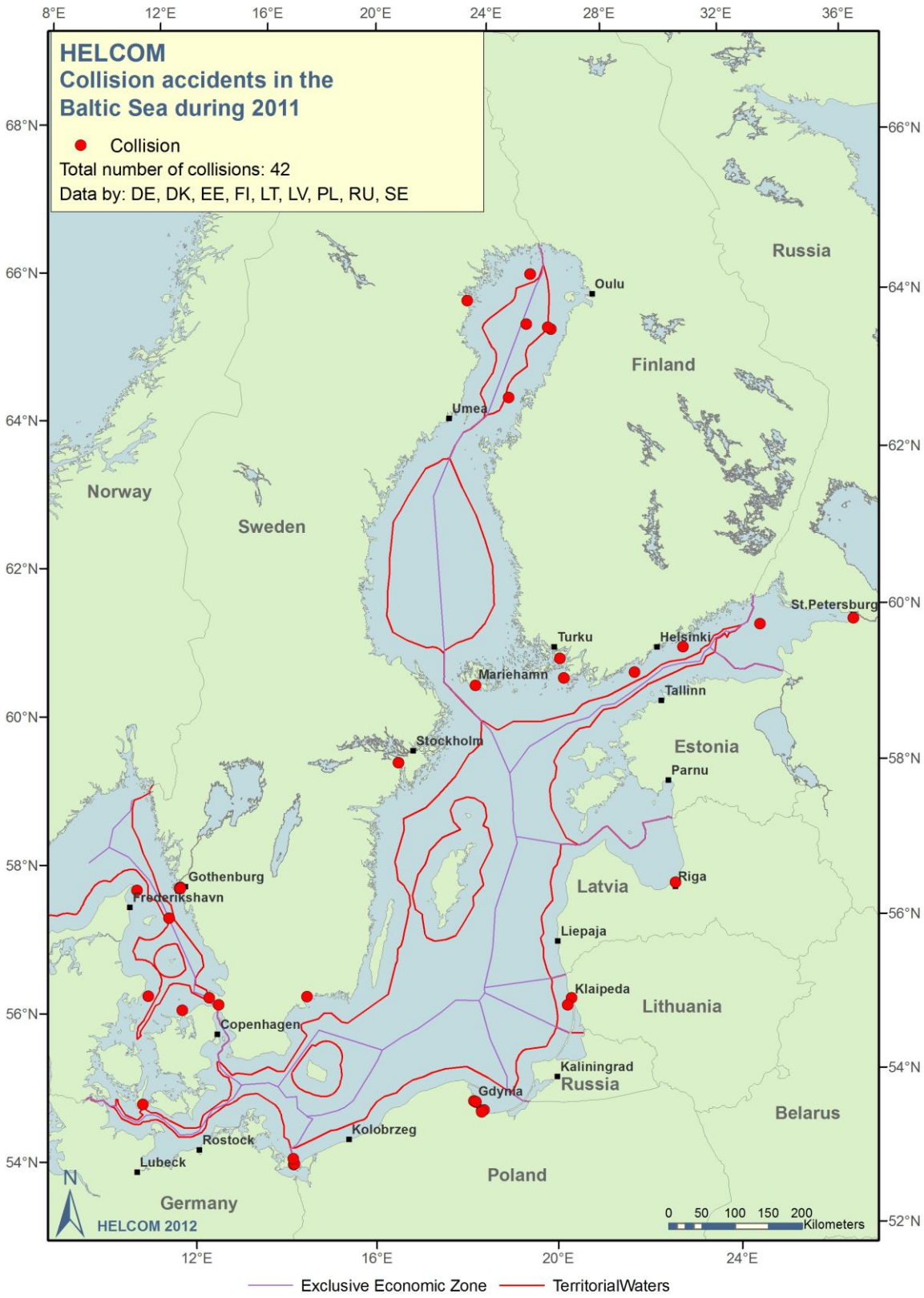


Figure 13

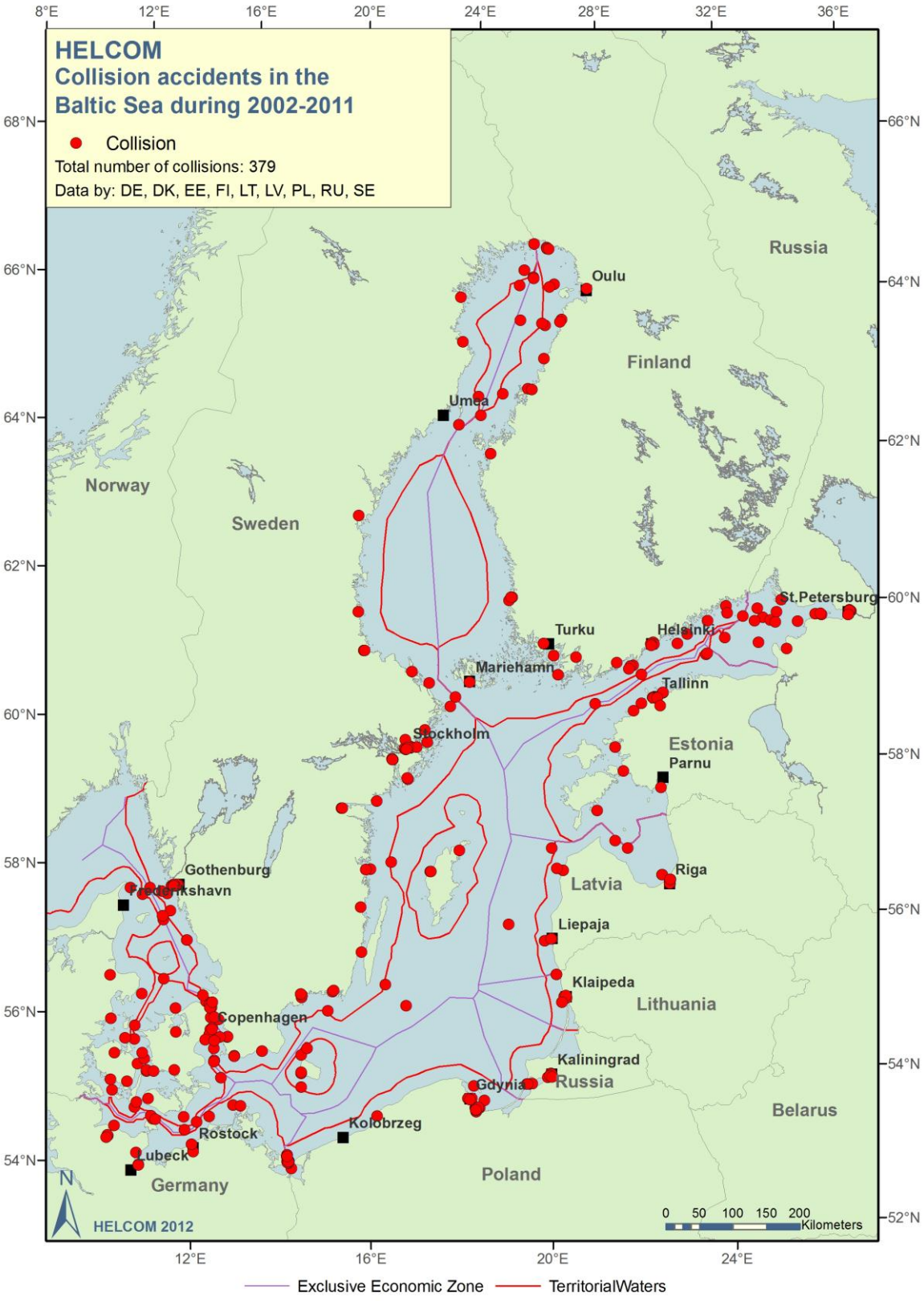
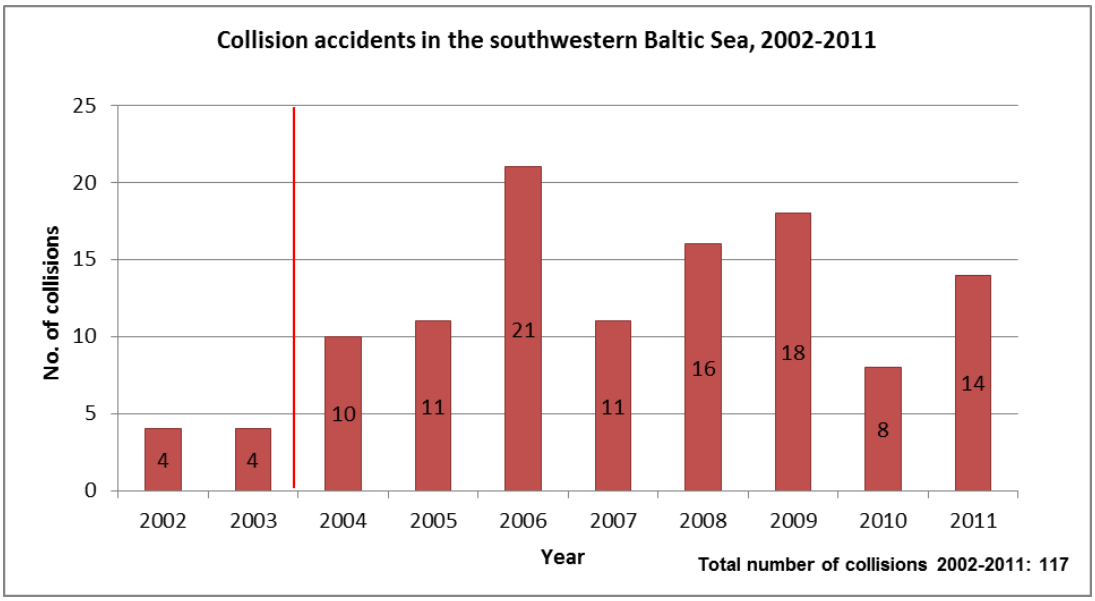

HELCOM
Collision accidents in the
Baltic Sea during 2002-2011
Collision
Total number of collisions: 379
Data by: DE, DK, EE, FI, LT, LV, PL, RU, SE
Russia
Finland
Norway
Sweden
Estonia
Latvia
Lithuania
Belarus
Poland
Germany
Oulu
Umea
Turku
Mariehamn
Stockholm
Helsinki
St.Petersburg
Tallinn
Parnu
Riga
Liepaja
Klaipeda
Kaliningrad
Gdynia
Kolobrzeg
Rostock
Lubeck
Copenhagen
Gothenburg
Frederikshavn
N
HELCOM 2012
0 50 100 150 200
Kilometers
Exclusive Economic Zone
TerritorialWaters

Figure 14

The southwestern Baltic Sea, including the Danish straits has been one of the hot spots for collisions in the Baltic, with the number of collision accidents growing until 2009. After the low number (8) of collisions in the southwestern Baltic in 2010, the number increased again in 2011 with 43% compared to 2010 but the collisions were still 22% fewer than in 2009. The number of collisions in the southwestern Baltic accounted for 33% of all collisions in 2011. For the time period 2002-2011 31% of all reported collisions took place in the southwestern Baltic (***Figures 15 and 16***).



Please note that due to a new reporting format in 2004 the data for 2002-2003 is not fully comparable with the data for 2004-2011.

Figure 15

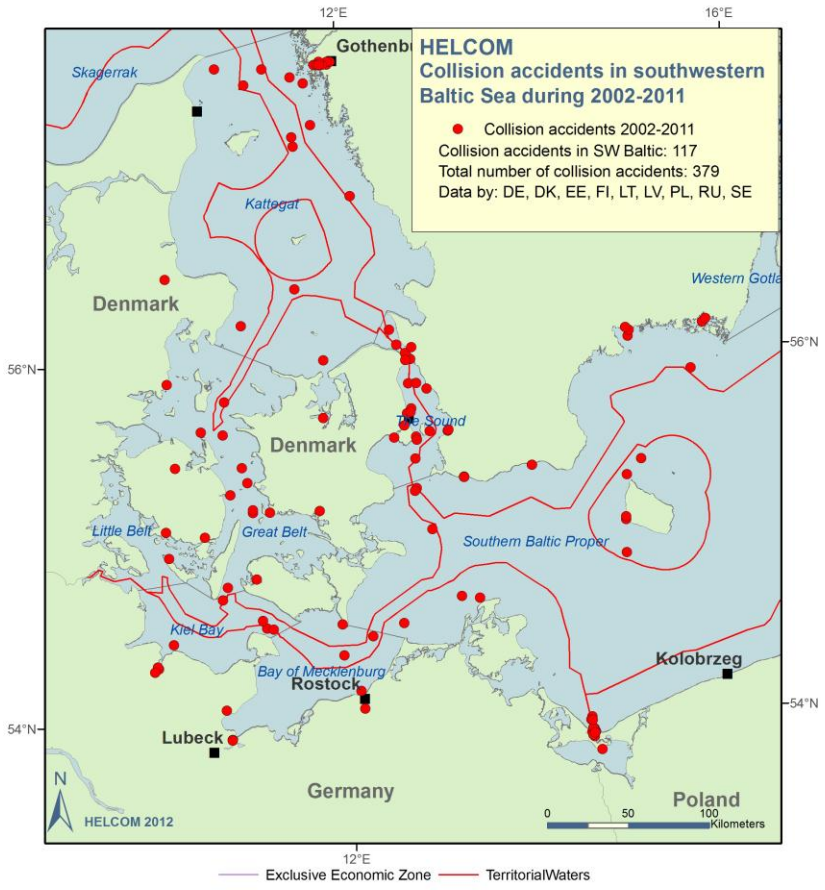


Figure 16

The number of collisions in the Gulf of Finland has reduced drastically since 2005. The number of collisions in 2011 in the Gulf of Finland is in line with the number of collisions in 2006-2010. Out of a total of 42 collisions in 2011, five were reported to have occurred in the Gulf of Finland (***Figure 17***). For the 10-year period 2002-2011, collisions in the Gulf of Finland made up 18% of the total number of reported collisions (***Figure 18***).

Please note that due to a new reporting format in 2004 the data for 2002-2003 is not fully comparable with the data for 2004-2011.

Figure 17

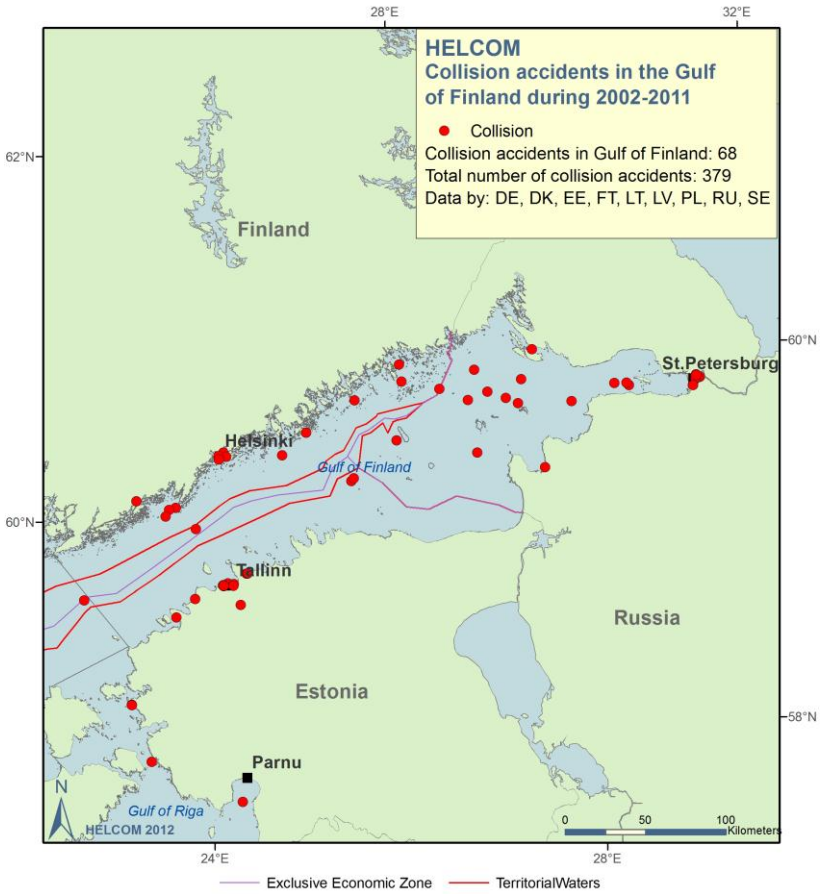
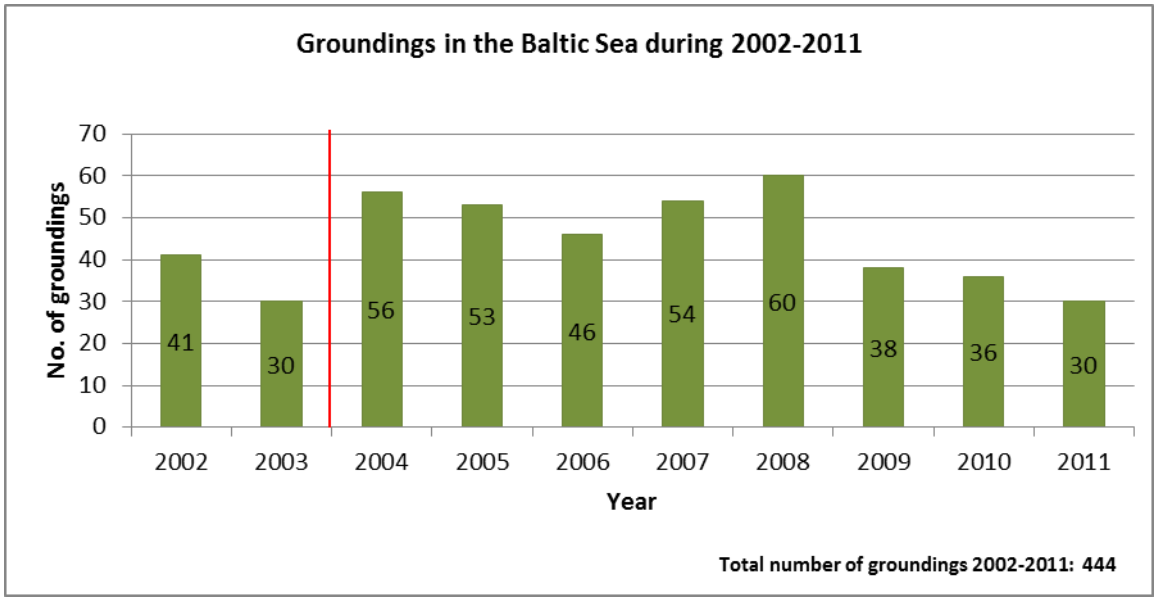


Figure 18

4.2 Groundings

In 2011, there were 30 reported groundings in the Baltic Sea area. Accounting for 25% of the total number of reported accidents in 2011, groundings were the second most common type of accidents in the Baltic. A decreasing trend can be seen in the number of groundings since the peak year in 2008 (60). The number of groundings in 2011 decreased with 17% compared to 2010 and as much as with 50% compared to 2008 (***Figure 19***).



Please note that due to a new reporting format in 2004 the data for 2002-2003 is not fully comparable with the data for 2004-2011.

Figure 19

Figure 20 illustrates the presence/absence of a pilot on board vessels in cases of grounding accidents in 2011. Clearly the vast majority (64%) did not have a pilot on board at the time of grounding. In 2011, most reported groundings (60%) occurred with vessels having a draught size of less than 7 meters. Information on draught size for vessels involved in groundings in 2011 was missing for 27% of the ships, thus there is no full overview on the size of the ships involved in groundings. None of the grounded ships had a draught size of more than 11 m. (***Figure 21***). Small vessels are not covered by IMO's recommendations on the use of pilotage.

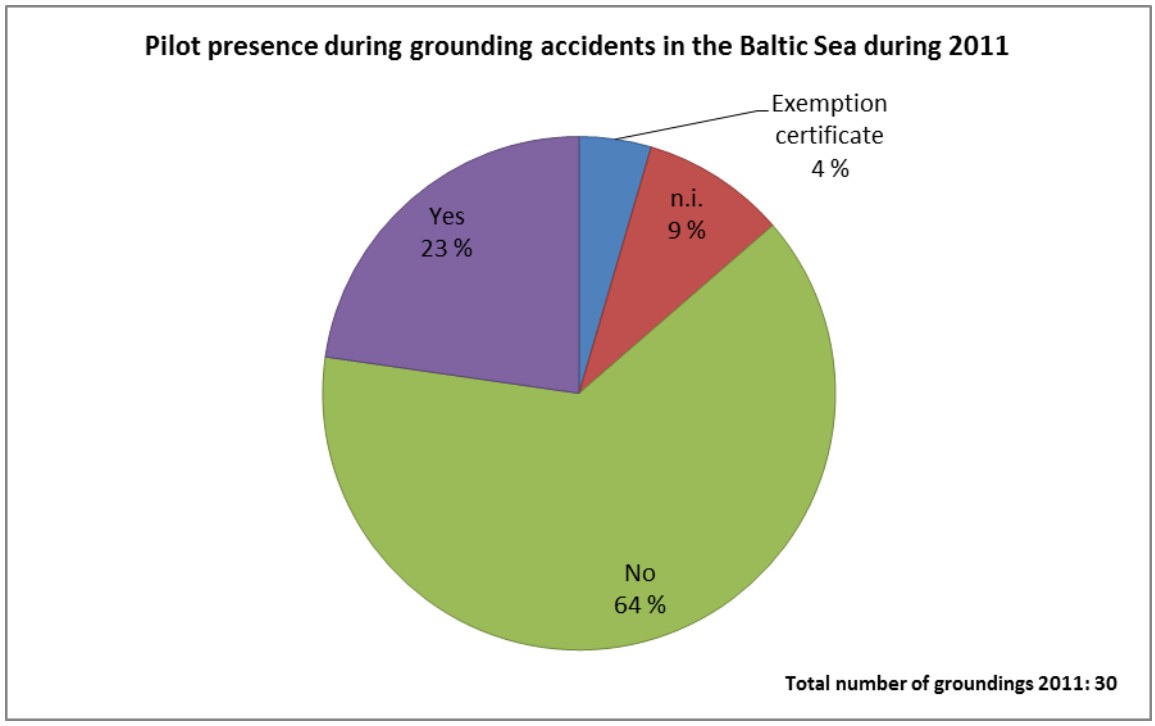


Figure 20

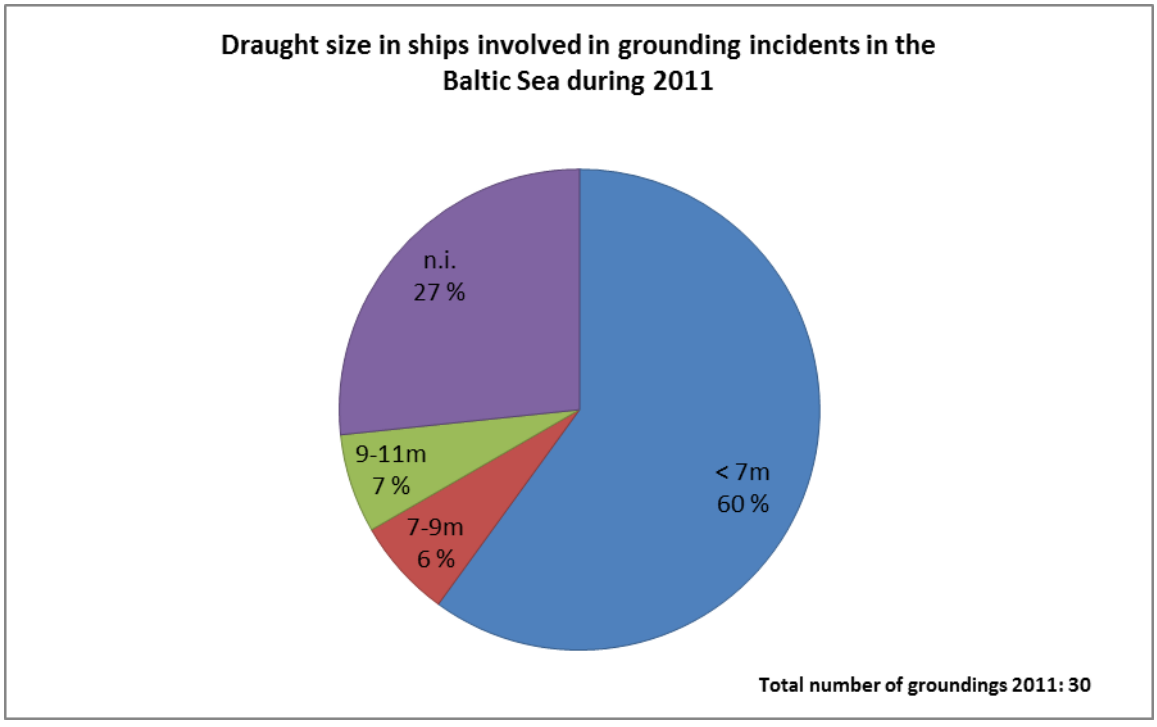


Figure 21

The map of the reported groundings in 2002-2011 (***Figure 22***) indicates that the areas of primary concern are:

- Danish straits
- Gulf of Finland
- Åland/Archipelago Sea area
- Swedish coast of the Baltic Proper
- Ports.

The other areas where groundings have occurred deserve the attention of the relevant states as well.

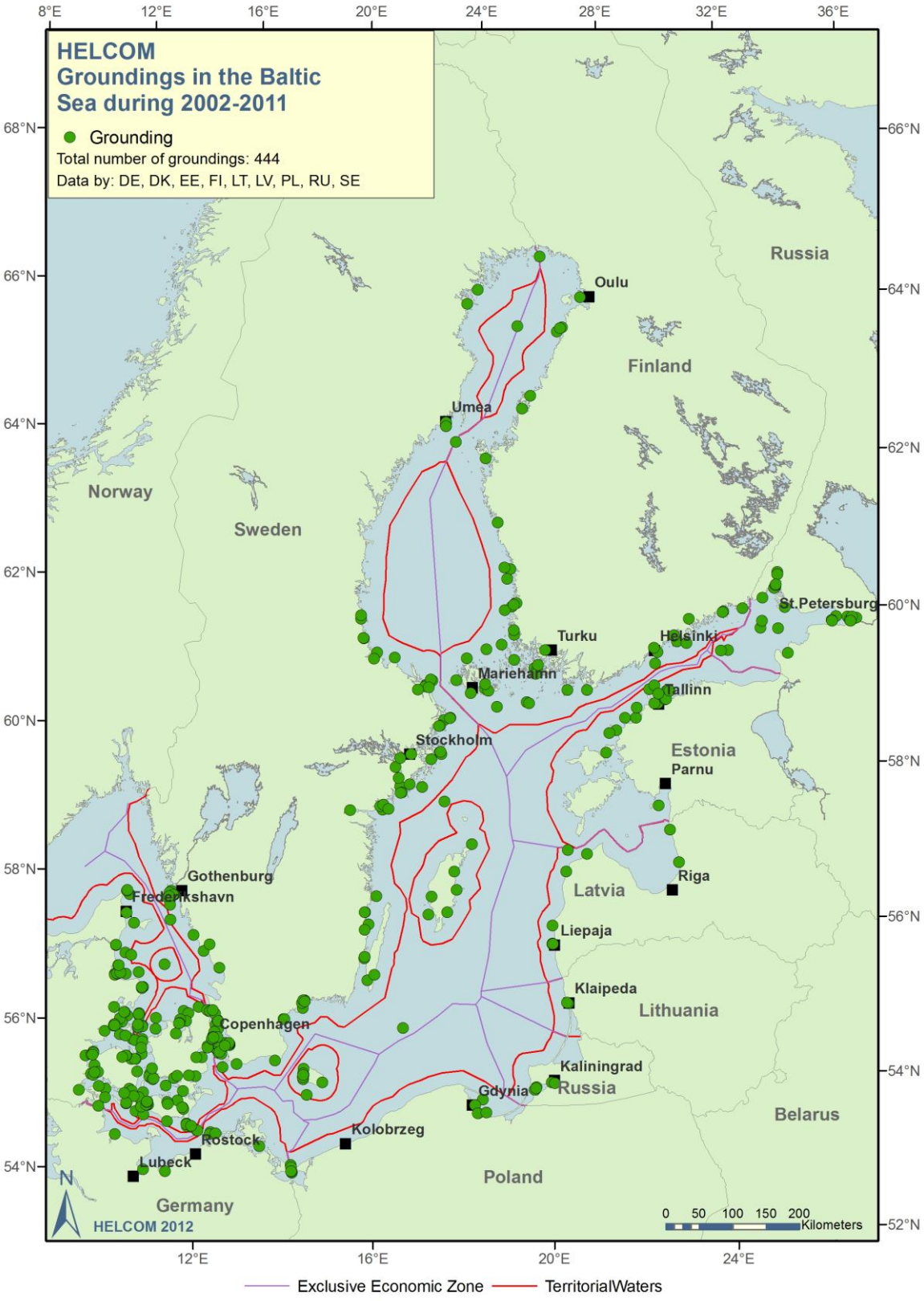

HELCOM
Groundings in the Baltic Sea during 2002-2011
Grounding
Total number of groundings: 444
Data by: DE, DK, EE, FI, LT, LV, PL, RU, SE
Russia
Finland
Norway
Sweden
Estonia
Latvia
Lithuania
Belarus
Poland
Germany
Oulu
Umea
Turku
Mariehamn
Stockholm
Helsinki
St.Petersburg
Tallinn
Parnu
Riga
Liepaja
Klaipeda
Kaliningrad
Gdynia
Kolobrzeg
Rostock
Lubeck
Copenhagen
Gothenburg
Frederikshavn
HELCOM 2012
0 50 100 150 200 Kilometers
Exclusive Economic Zone
TerritorialWaters

Figure 22

The map of groundings in 2011 (***Figure 23***) especially points to the Danish straits and ports.

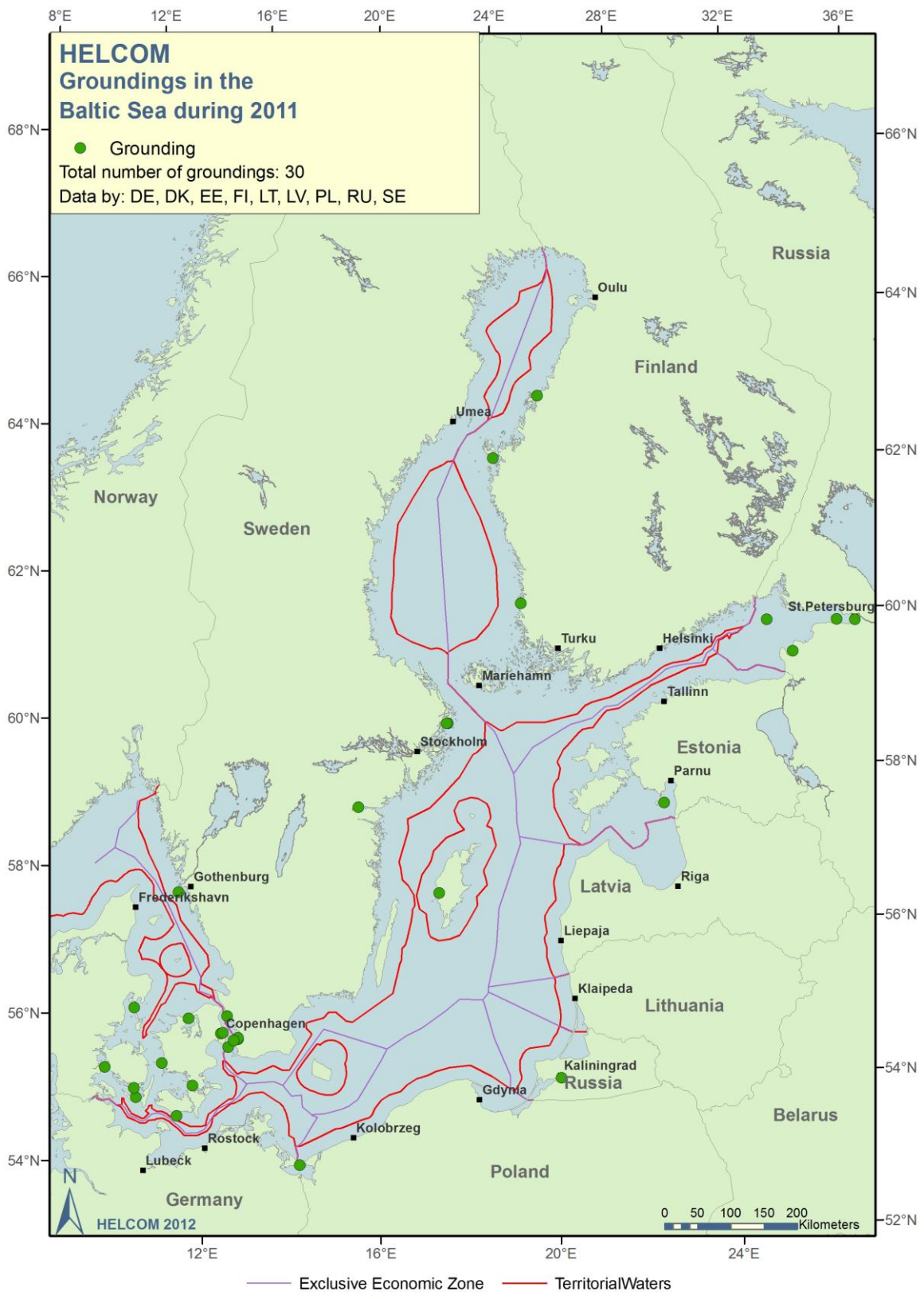
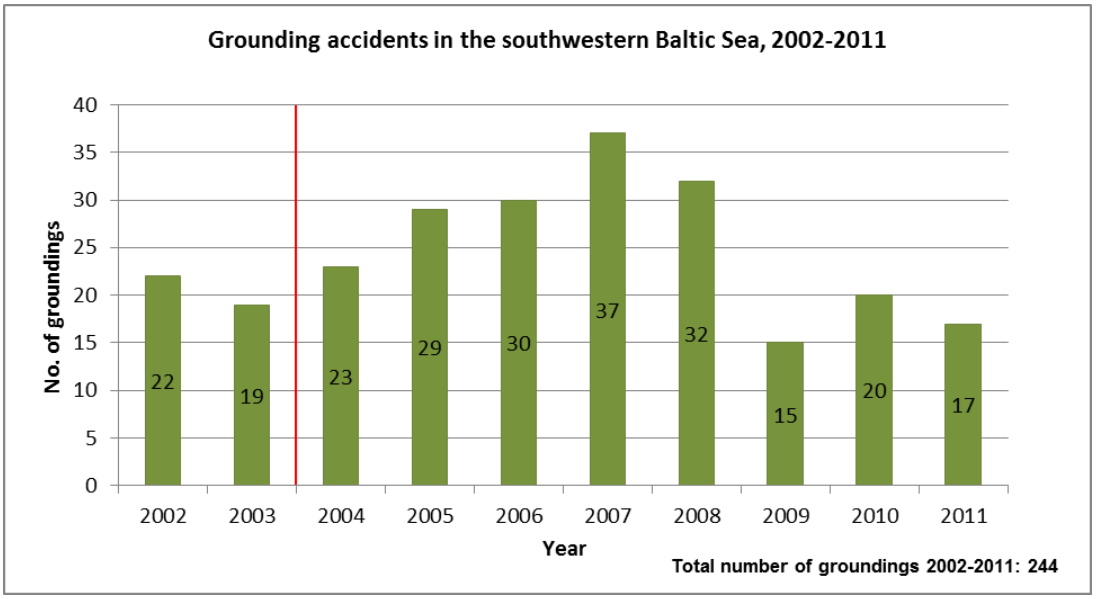


Figure 23

The number of groundings reported in the southwestern Baltic Sea decreased by 15% from 2010 to 2011, continuing the decreasing trend of groundings in the area since 2008. Only in 2009 the number of groundings was lower (15) than in 2011. Still, the southwestern Baltic Sea, including the Danish straits, continues to be the main problem area for groundings in the Baltic, with 56% of the 2011 groundings occurring in the area, and 55% of all groundings registered for the period 2002-2011 (***Figures 24 and 25***).



Please note that due to a new reporting format in 2004 the data for 2002-2003 is not fully comparable with the data for 2004-2011.

Figure 24

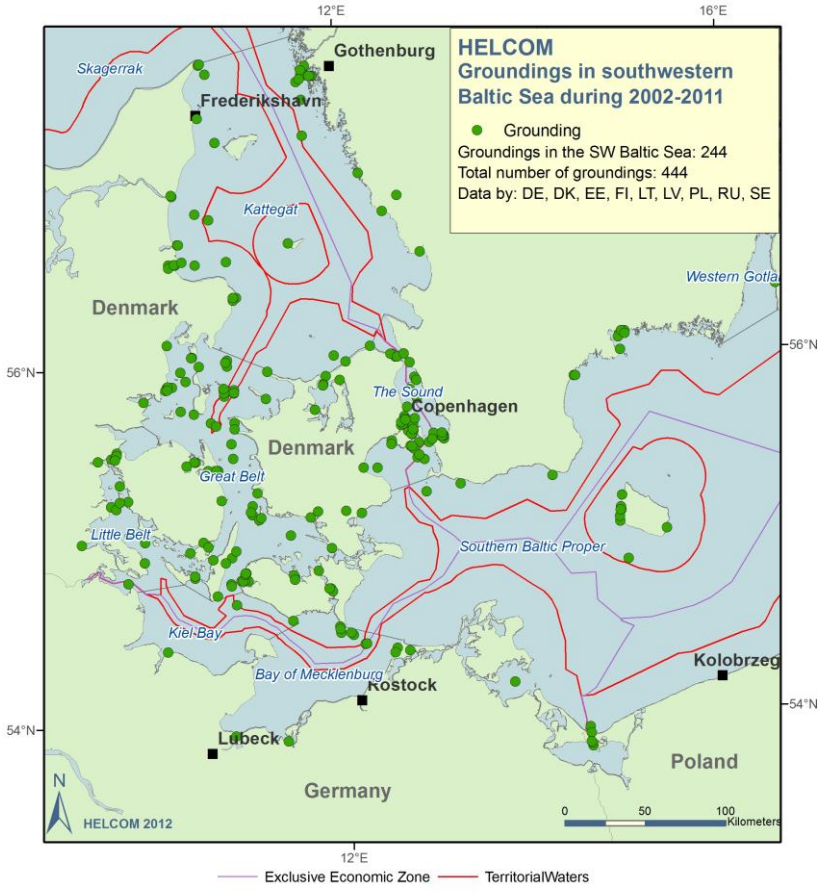


Figure 25

The number of the groundings in the Gulf of Finland in 2011 was reported to be four. This is at the same low level as the previous years except for 2008 when the number of groundings in the Gulf of Finland was nine (***Figure 26***).

Please note that due to a new reporting format in 2004 the data for 2002-2003 is not fully comparable with the data for 2004-2011.

Figure 26

5 Types of vessels involved in the accidents

Cargo vessels were the most common type of ships involved in accidents in 2011 accounting for 52% of all vessels (***Figure 27***). Passenger vessels and tankers were involved in 20% and 13% of all reported accidents, respectively. Other unspecified types of vessels were involved in 15% of all accidents in 2011.

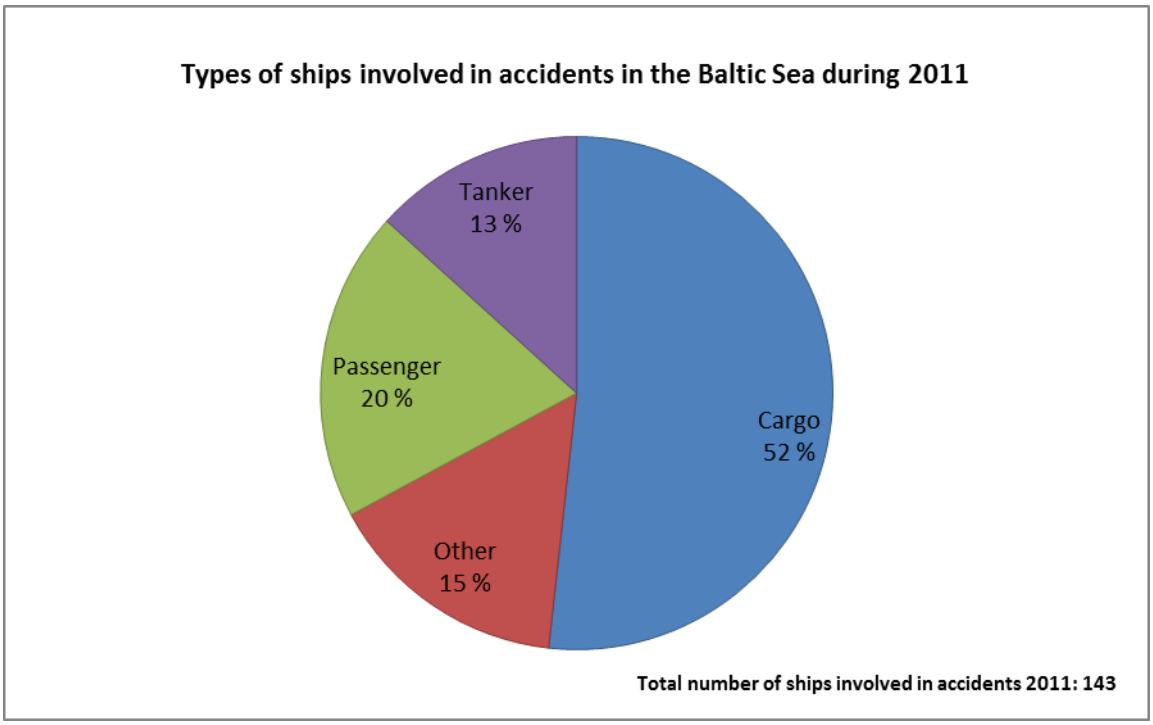


Figure 27

As tankers are often an issue of high concern, a map on accidents involving tankers in 2002-2011 is presented in ***Figure 28***. Of the 19 tankers involved in accidents in 2011, three were single hulled and seven were double hulled. Data on hull type was not available for 47% of the accidents involving tankers.

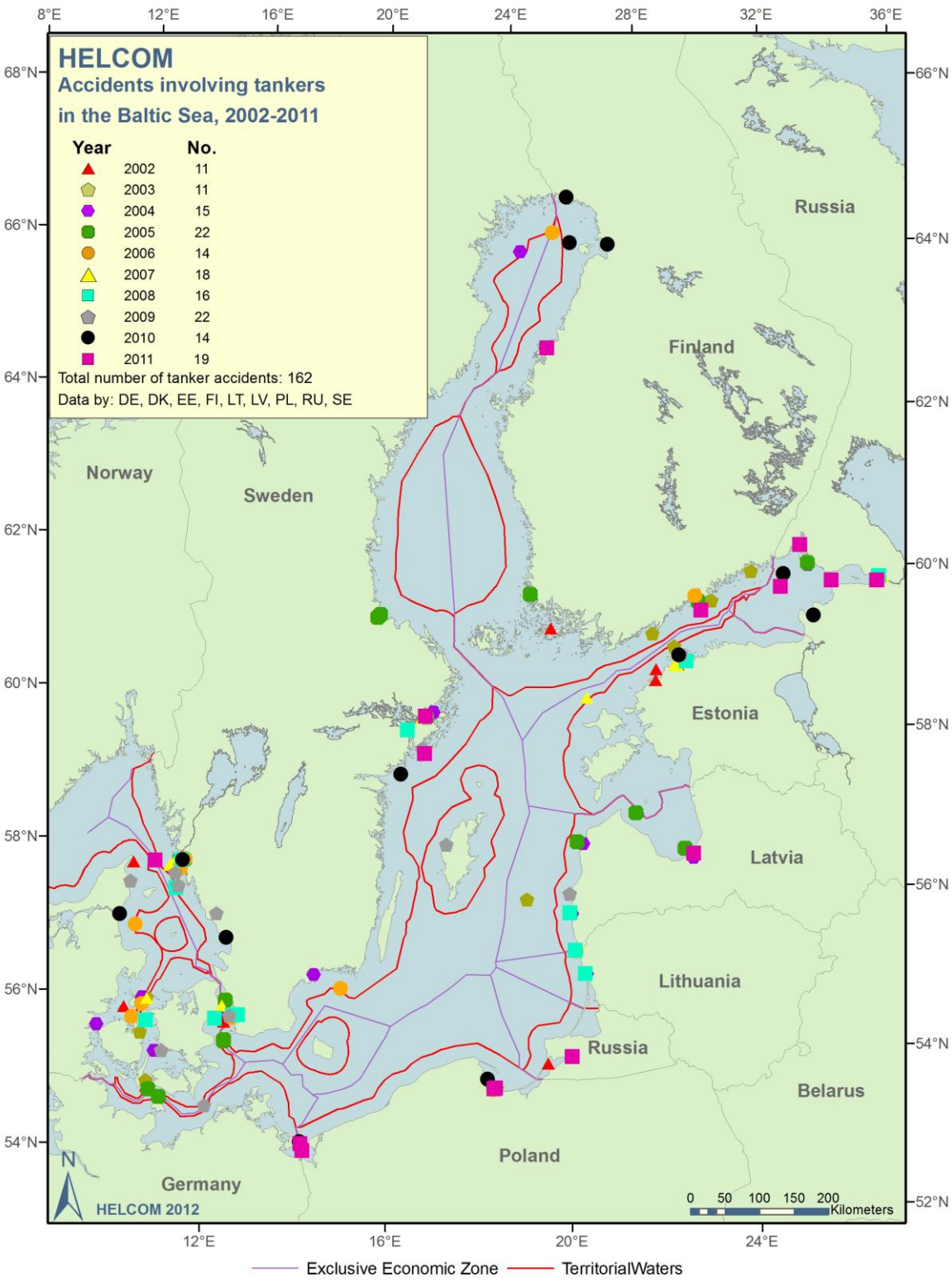

HELCOM
Accidents involving tankers
in the Baltic Sea, 2002-2011
Year No.
2002 11
2003 11
2004 15
2005 22
2006 14
2007 18
2008 16
2009 22
2010 14
2011 19
Total number of tanker accidents: 162
Data by: DE, DK, EE, FI, LT, LV, PL, RU, SE
Russia
Finland
Norway
Sweden
Estonia
Latvia
Lithuania
Russia
Belarus
Poland
Germany
HELCOM 2012
0 50 100 150 200
Kilometers
Exclusive Economic Zone
TerritorialWaters

Figure 28

6 Causes of accidents

The main cause of accidents, accounting for 50% of all accidents in 2011, was human factor as in many previous years. Technical factors and external factors accounted for 22% and 17%, respectively. Other factors were the cause for 5% of the accidents and in 6% of the accidents no data was available on the cause of the accidents (***Figure 29***).

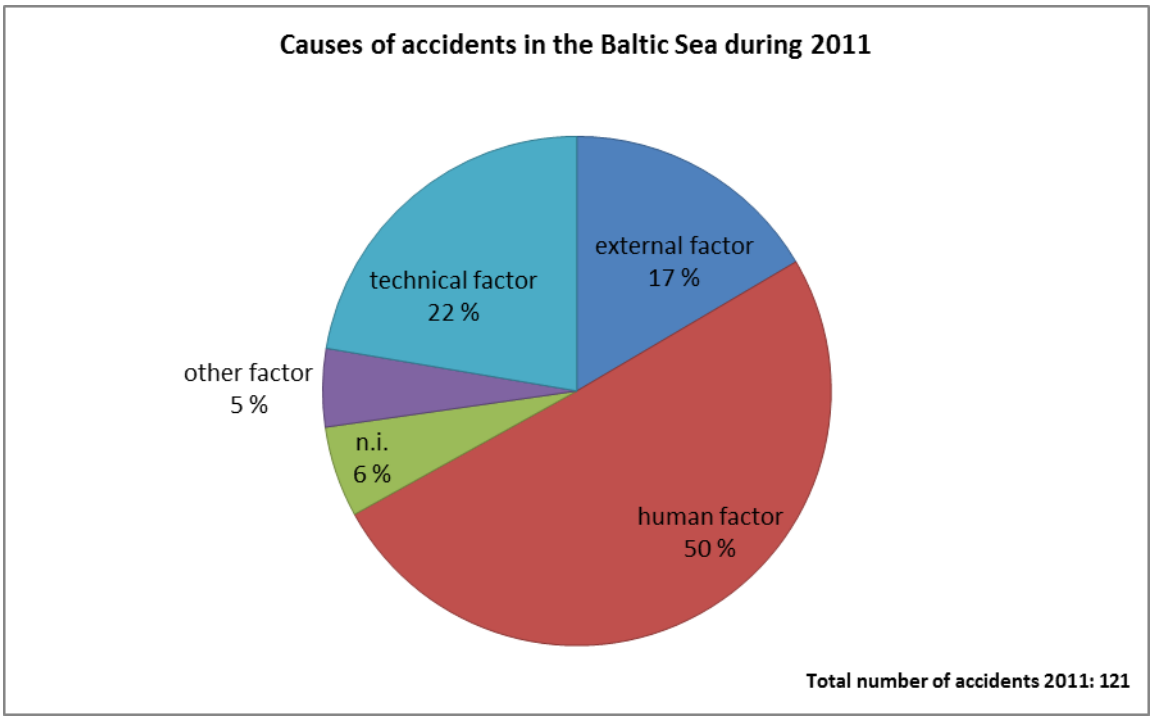


Figure 29

Spatial distribution of accidents with indication of the cause is presented in ***Figure 30***.

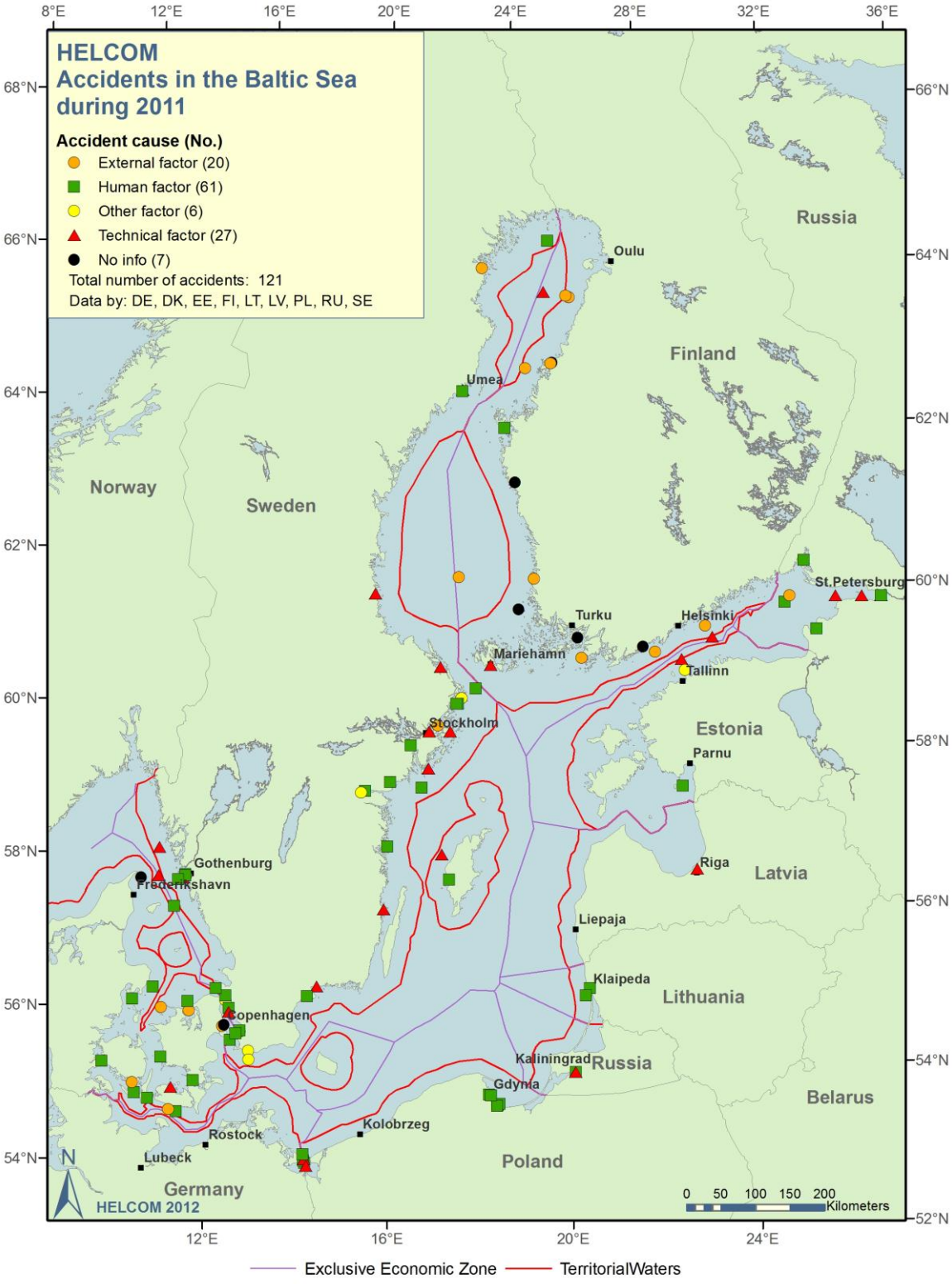

HELCOM
Accidents in the Baltic Sea during 2011
Accident cause (No.)
External factor (20)
Human factor (61)
Other factor (6)
Technical factor (27)
No info (7)
Total number of accidents: 121
Data by: DE, DK, EE, FI, LT, LV, PL, RU, SE
Russia
Finland
Norway
Sweden
Estonia
Latvia
Lithuania
Belarus
Poland
Germany
Oulu
Umea
Turku
Helsinki
St.Petersburg
Mariehamn
Tallinn
Stockholm
Parnu
Riga
Liepaja
Klaipeda
Gothenburg
Frederikshavn
Copenhagen
Kaliningrad
Gdynia
Kolobrzeg
Rostock
Lubeck
HELCOM 2012
0 50 100 150 200 Kilometers
Exclusive Economic Zone
TerritorialWaters

Figure 30

Of the reported accidents in 2011, 15 took place in icy conditions (**Figure 31**). No information was provided on ice presence for around 50% of the accidents.

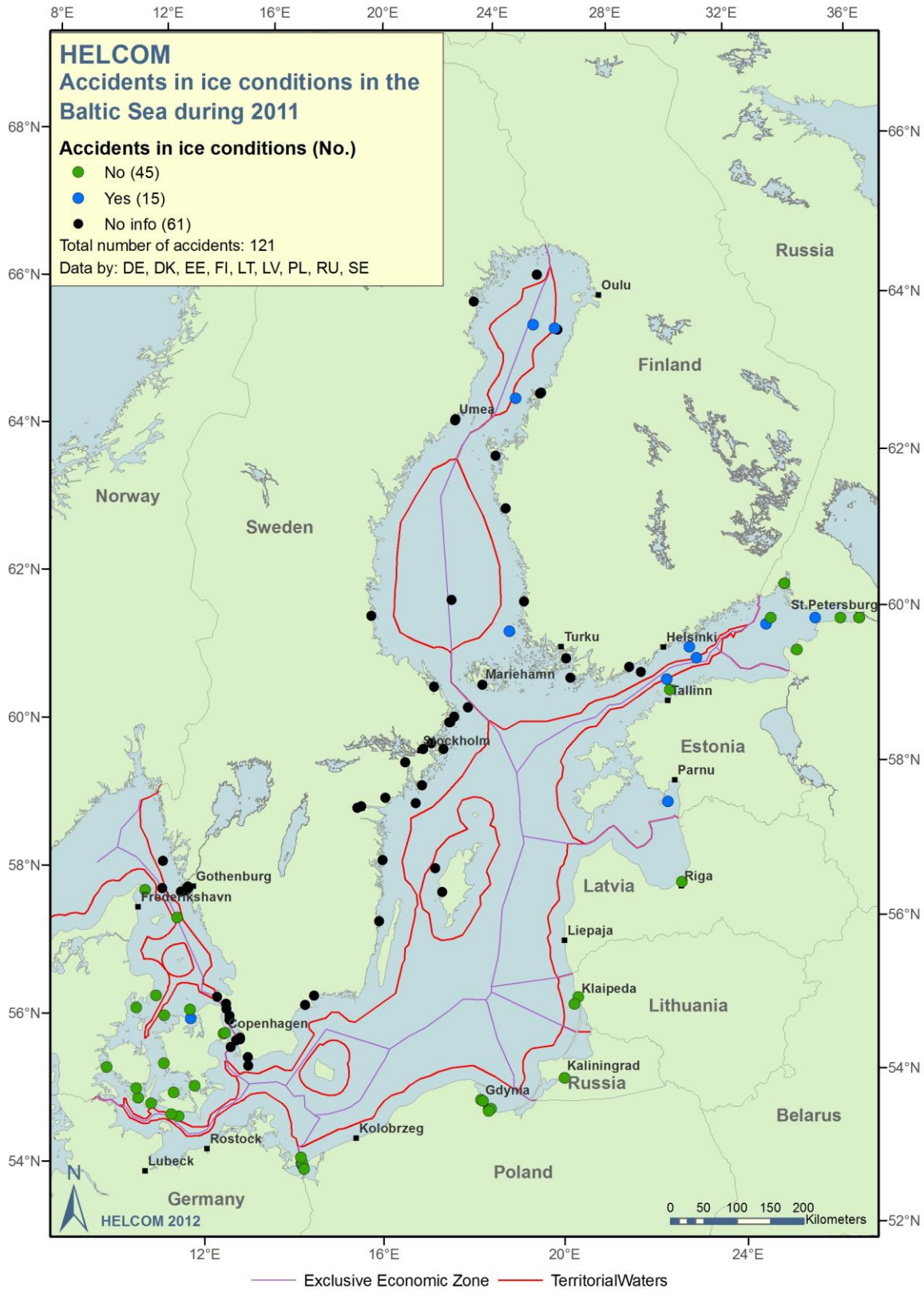


Figure 31
(Note that one accident in ice conditions took place near Swinoujscie*)*

7 Accidents with pollution

According to the 2002-2011 data, 7% of the reported accidents ended up with some kind of pollution. In 2011, this percentage was slightly higher at 9%, with 11 out of the total 121 reported accidents resulting in pollution. The number of pollution accidents increased with one compared to 2010 and 2009. The number of pollution accidents in 2011 should however be considered carefully since the reports of 38 accidents did not include information on whether or not they caused pollution (***Figure 6***). All incidents with pollution in 2011 were pollution incidents occurring e.g. during fuel transfer except for one which was caused due to machinery damage (***Figure 32***). The type of vessels involved in pollution accidents included six tankers, four cargo ships and one passenger ship (***Figure 33***).

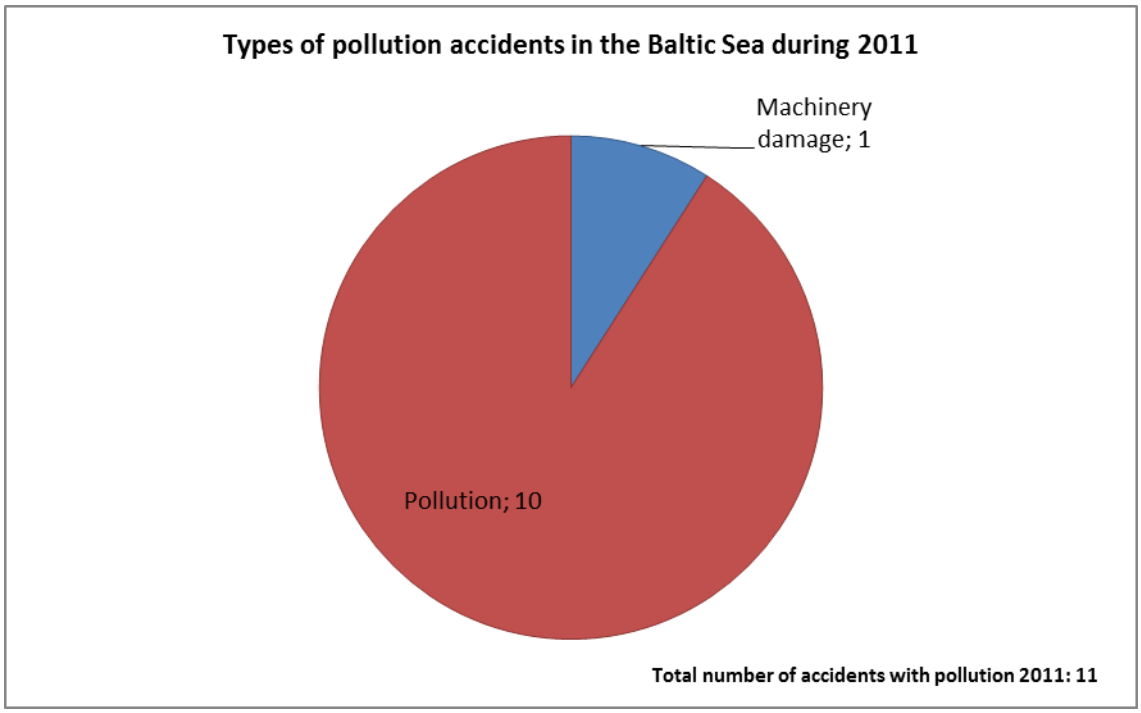


Figure 32

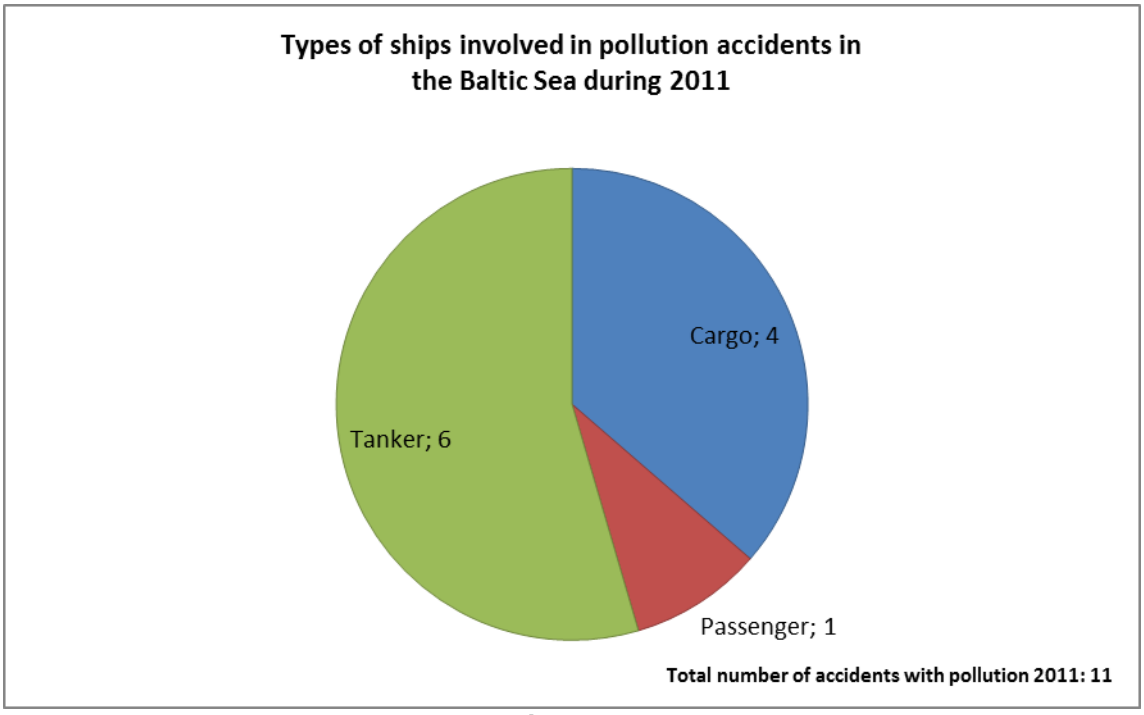


Figure 33

Seven out of the 11 accidents resulting in pollution in 2011 occurred due to human factors. Both technical factors and other unspecified factors caused two pollution accidents (***Figure 34***).

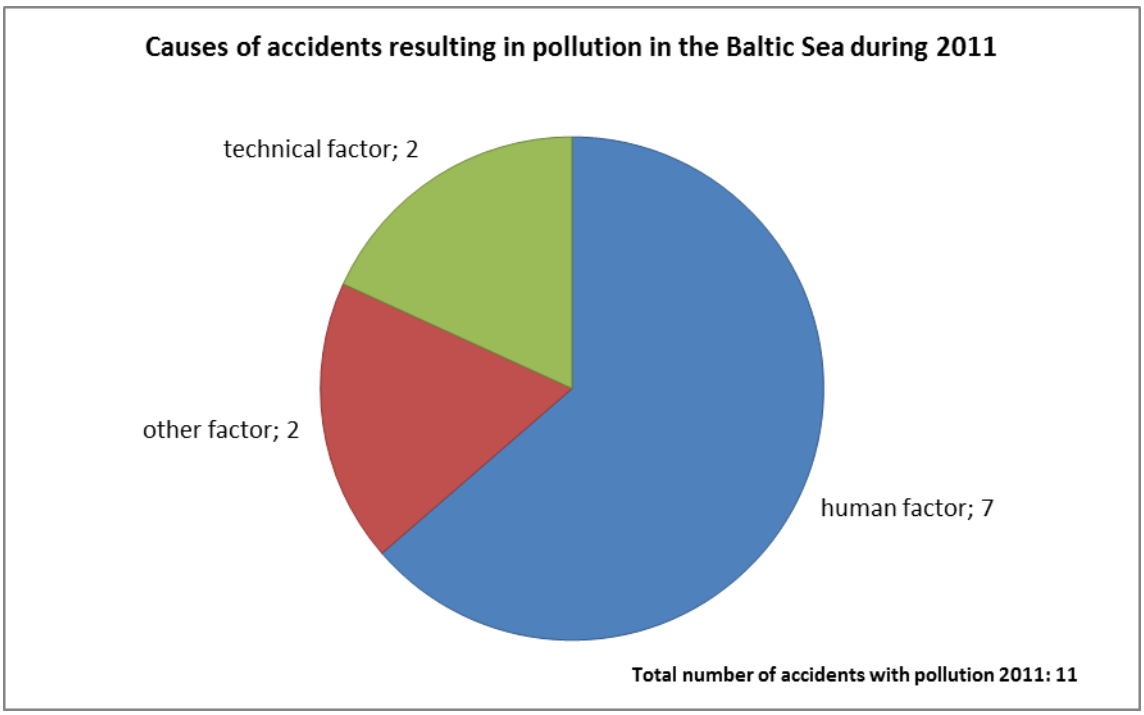


Figure 34

Special characteristics such as low salinity, small water volume, restricted connection to the ocean, seasonality and the ice cover during winter make the Baltic Sea highly vulnerable to the effects of oil spills which makes swift response very important. The oil recovery rate in the Baltic Sea is generally much higher than the global average and as proved by the cases of previous major pollution accidents, it can reach as much as 50%.

The spatial distribution of the accidents in 2011 resulting in pollution is presented in ***Figure 35*** and some additional details of the pollution accidents are contained in ***Table 4***.

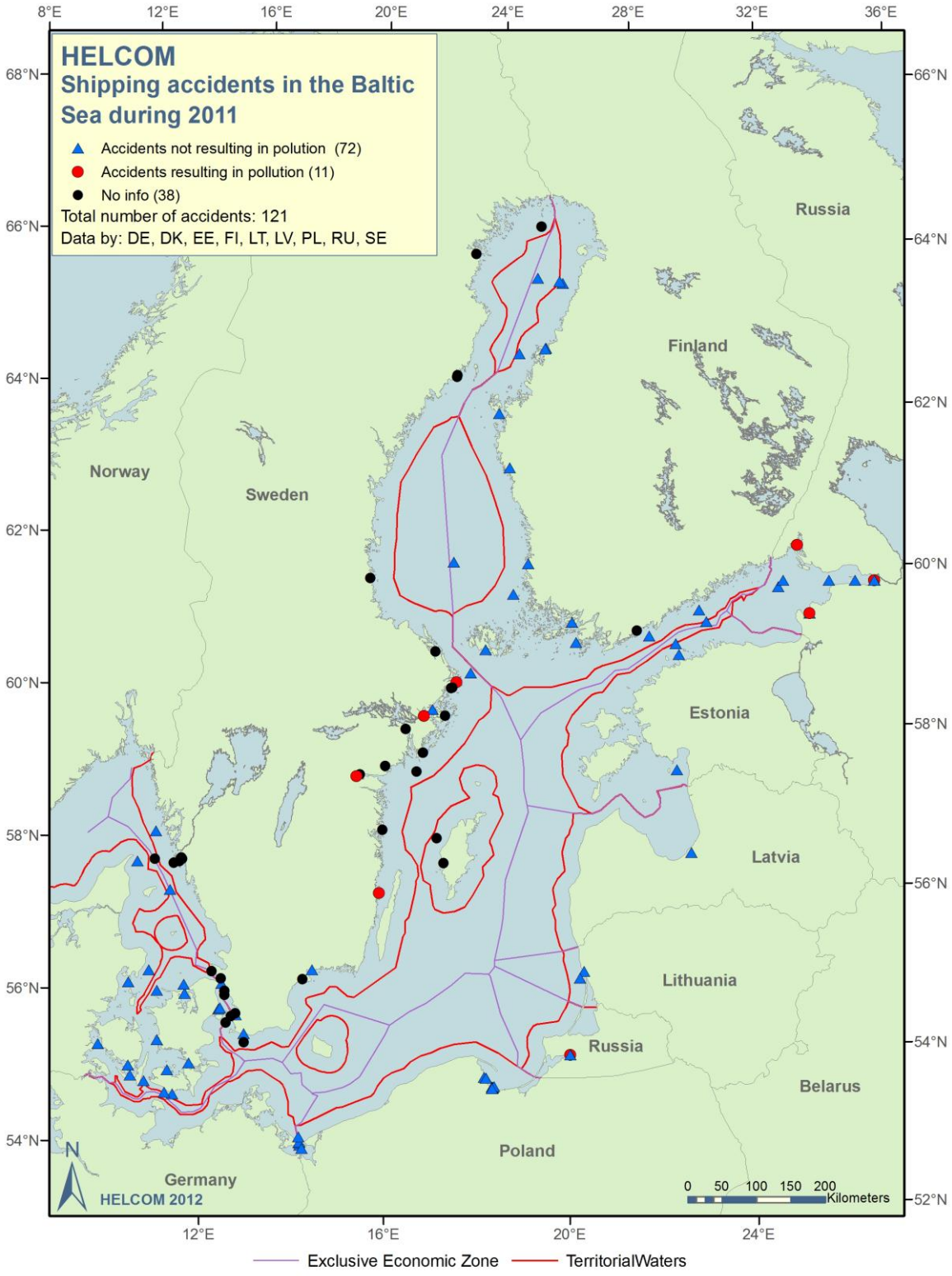


Figure 35

(Note that three pollution accidents took place near St Petersburg and two took place near Vysotsk)

Country	Date	Latitude	Longitude	Ship name(s)	Ship type(s)	Ship size (gt)	Cargo	Type of accident	Cause of accident	Type of pollution
Russia	6.1.2011	60,6167	28,5667	ARIES, 7802110, Russia	Tanker	2801	n.i.	Pollution	Human factor	Mazut
Russia	28.2.2011	54,6833	20,5167	SALTSTRAUM, 7922130, Russia	Tanker	1881	n.i.	Pollution	Human factor	Mazut
Russia	19.4.2011	59,9000	30,2500	RONDO, 8725723, Russia	Tanker	235	n.i.	Pollution	Human factor	Mazut
Russia	23.5.2011	59,9000	30,2500	CARTEN MARIA, 8405878, Barbados	Cargo	3176	n.i.	Pollution	Human factor	Ship fuel IFO-180 (mazut)
Russia	29.7.2011	60,6167	28,5667	MASALLI, 9435313, Malta	Tanker	7833	mazut	Pollution	Human factor	Ship fuel IFO-380 (mazut)
Russia	9.8.2011	59,9000	30,2500	VANINO, n.i., Russia	Tanker	1896	n.i.	Pollution	Human factor	Ship fuel IFO-380 (mazut)
Russia	12.8.2011	59,7167	28,4000	ECOBALT, n.i., Russia	Cargo	n.i.	n.i.	Pollution	Human factor	Ship fuel IFO-318 (mazut)
Sweden	31.3.2011	59,7167	19,0667	Finnfellow, SBWA, Sweden	Passenger	33724	Cars and passengers	Pollution	Other factor	Diesel
Sweden	15.11.2011	57,0833	16,5500	Forester, DIUT, Germany	Cargo	4110	General cargo	Pollution	Technical factor	Diesel
Sweden	20.6.2011	58,6333	16,2666	Birka Shipper, OJDM, Finland	Cargo	6620	General cargo	Pollution	Other factor	Bunker spill
Sweden	28.3.2011	59,3333	18,1333	Zebron, SBQH, Sweden	Tanker	391	Oil products	Machinery damage	Technical factor	Oil

Table 4. *Data on accidents resulting in pollution in 2011.*

More information

For more information about maritime traffic and accidents, see the HELCOM website: http://www.helcom.fi/shipping/en_GB/main/

The complete HELCOM dataset on shipping accidents from 1989-2011 can be accessed via the HELCOM map and data service (http://maps.helcom.fi/website/mapservice/index.html) for viewing, querying and/or downloading. Information on establishing a *web map service* connection to the dataset is also available via the HELCOM map and data service